A GADAMERIAN INVESTIGATION OF THE TWO CULTURES PHENOMENON IN AN UNDERGRADUATE HONORS RESEARCH FELLOWSHIP

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The Two Cultures phenomenon, first given its name by C. P. Snow in 1956, consists of a conflict between participants in the academic communities of the natural sciences and the humanities; it also mirrors the methodological debate in the social sciences. This phenomenon also occurs in undergraduates in an interdisciplinary research fellowship at the University of Pittsburgh called the Brackenridge Fellowship. The phenomenon is not an issue of jargon—it is about people with different interpretive structures coming into conflict. The Two Cultures phenomenon should not be regarded as an anomaly of normally peacefully-interacting academic disciplines. There are issues about the tradition, culture, and epistemology of different academic disciplines that are perceived as deeply and fundamentally different, and it is only through Two Culture conflicts that these differences are thrown into sharp relief.

The problem of interdisciplinary misunderstanding is illuminated by viewing understanding as "being able to imagine a question that a statement answers," as developed in the epistemological theory of hermeneuticist Hans-Georg Gadamer. This study examines the Two Cultures phenomenon in the Brackenridge Fellowship using the methodology of hermeneutic phenomenology. It finds that students usually consider the natural sciences objective and the humanities subjective. These perceptions are overgeneralized at best and harmfully false at worst. Students in all disciplines demonstrate a lack of awareness of the

traditional and communal basis of interpretation in academic fields. However, these perceptions do help to hold academic disciplines together, as students define their academic identities by using other fields as counter-examples.

There are practical implications from this study for liberal education. Colleges and universities should consider general education programming beyond the traditional requisite of requiring several courses in different subject areas. Without an examination of how the structure of general education implies value judgments of academic disciplines and how these fields have ideas that are perceived as conflicting with each other, an important teachable moment is missed. Gadamerian hermeneutics helpfully provides guidance as to how a truly educational conversation can be realized with these issues, through examining the way that traditions are enacted in academic disciplines.

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PREFACE

A hermeneutic project requires much introspection, but it is possible to focus so much on myself that the people who supported me can be overlooked. I am glad to have this opportunity to recognize the love and resources of those who have surrounded me. I thank all those who have helped and supported me through this project.

First among my supporters have always been my family; to my wife, children, parents, and sisters, thank you for your support over the years, encouraging me to get to this stage of my academic life. To my children, Michael and Mary: When you grow up you may not remember the time I spent away from you working on this project, but I always will remember it as a gift that you gave to me when you were too young to realize you were giving it. To my wife Ann, who *will* remember but who never complained: Thank you for your constant love and support, thank you for the lost weekends and evenings, thank you for keeping our home whole and happy when I was so busy. It says so much about you that you are glad that I enjoyed this project, but I am sure you will be happier to have me with the family again. Even though I wrote this study, you more than anyone else made it possible.

Thank you to the University of Pittsburgh Honors College staff who patiently listened to my academic exertions and helped me to take a break from them when I needed to do so. In addition, I sincerely thank the Honors College for providing monetary support for transcription.

Finally, I thank my committee members for their support, encouragement, and guidance. Erik Ness helped me contextualize my research in terms of the field of higher education and academic-cultural research that has already been done. Alec Stewart gave me a sounding board for my crazy ideas about creating Two Cultures conflicts on purpose and helped me to deepen my education in the history of liberal education. Noreen Garman helped me from the beginning, when my ideas were unfocused, to press on and let my personal history and my academic interests speak to and illuminate one another. Most of all, thank you to Mike Gunzenhauser, who provided many hours of editorial help, encyclopedic guidance across disciplines, and deep methodological knowledge in the field.

Thank all of you for your help.

1.0 INTRODUCTION

I have never admitted it to anyone, but down deep, I've always had a desire to know everything. Not in the sense that knowing every single academic subject and bit of trivia was my goal, but in the sense that the consilience project—finding a way to tie all knowledge together under one system—has always been a fascinating topic to me. Aristotle is known as the last human being with a deep grasp of all major fields of study; the facts that I'm probably not as smart as he was and that the amount of knowledge in the world will never be as small as it was in his time are not lost on me. In different eras, different academic fields have staked their claims to providing the framework under which all other fields could be organized. Philosophy has been called the queen of the sciences, and it has been at the base of Western academia from the beginning. In the modern era, natural science has begun to stake a claim as being the best way of framing knowledge, and in the past fifty years the social sciences have also begun staking their claim as well. I do not seek to master the humanities, the natural sciences, and the social sciences to compare their models, but my academic journey has provided me an introductory tour of these academic territories.

When I started studying the Two Cultures issue, I slowly started to realize its importance to the consilience project. It describes a phenomenon in which scholars trying to reach across academic lines cause academic conflicts. The Two Cultures issue shows both efforts at consilience and serious barriers to it. In the Two Cultures phenomenon, scholars associating

themselves with the natural sciences or humanities either see the two fields as incommensurable or see the other field as flawed. Whether these disciplinary divisions actually have different forms of knowledge is philosophically debatable, but these two views imply different strategies for consilience. If the fields are incommensurable, then a consilience model would consist of knowing which form of knowledge to use at what time. If one form of knowledge is flawed, consilience comes through knowing which field forms the basis and which is the special case.

Hermeneutic phenomenology is a methodology that takes the latter position, seeing philosophy and interpretation as framing the basis of all knowledge and the natural sciences (as well as significant portions of the humanities and social sciences) as an incomplete offshoot of the human understanding project. This methodology also places the researcher squarely inside the boundaries of the study; there is no attempt at objectivity. Therefore, my academic journey, as well as my vocational and ethical background, become part of the context of the study. In a hermeneutic study, when I look into a phenomenon, I am also looking into myself.

1.1 ONE OF MY STORIES

I was a high school student with a good problem: I had interests and talents in the natural sciences and humanities. My SAT scores were perfectly balanced (and high); I was taking Advanced Placement courses in physics, chemistry, calculus, history, and English; and I could have equally imagined myself going into the study of engineering or literature. I decided to try engineering, and when I was accepted at Penn State University, which had a reasonable cost and a great engineering reputation, the decision seemed final. In addition, at graduation I was awarded a $10,000-a-year scholarship from a local refinery to study engineering as well as a

writing scholarship from our local newspaper for a few hundred dollars. The universe (or at least the minor deities in charge of scholarships) seemed to agree that I was on the right path. I set aside my love of literature for my love of science and a secure future.

However, literature never went away. I found myself attending the theater and taking English courses whenever I could, even though I was studying in a College of Engineering. Some of my classmates wondered at why I bothered with the arts, which seemed inconsequential to them, although I found many engineering students with an appreciation for the humanities. At any rate, I still liked science, although the practical aspects of engineering became less interesting to me than issues that were more theoretical. Eventually I changed my major to physics, transferring into Penn State's College of Science and still feeling pulled toward the humanities as well. However, I could not see myself changing my major and making a full leap into the humanities. If anything, I wondered why I couldn't study both. The answers (money and time) were resounding, and I completed a BS degree in physics. I was enjoying physics, and even though I could not envision what I'd enjoy doing with the degree, it was engaging and exciting to study this field in the natural sciences.

I briefly and unsuccessfully attended graduate school for polymer science at Case Western Reserve University, where I discovered that my interest in doing natural science had waned. Deciding it was now time to try one of the roads less traveled, I went back to graduate school for English literature in Duquesne University's McAnulty School of Liberal Arts. It seemed incidental at the time, but one of the understandings my study of English literature helped me to develop was a historical view of how scientific certainty gained its ascendance in the West over other forms of understanding. In this way, the degree, beyond the value it had in

helping me understand an incredibly important artistic tradition, helped me place my internal concerns about science and the humanities in a larger context.

I imagined that I would become a professor of English, and even though I had gained valuable technical knowledge and even missed some of the scientific problem solving, I thought that I had finally found my way. Some of the graduate students and professors whom I encountered treated me as a strange specimen: someone who not only understood but also liked science, but also was studying English. Again, I could not understand why being interested in both was a problem. At the time, I also started learning about the idea of liberal education, which up until then I had missed by first studying one side of the disciplines and then leaping to the far side. As I attended my literature classes in a building assigned to liberal arts study, I was encouraged that there were ancient philosophers (and departments of contemporary universities) that believed that education across disciplines was a worthy goal.

I continued taking classes at night and started a job coordinating tutoring at a local college (Point Park University) to pay for it. I also eventually worked my way up to a part-time job teaching an introductory physical science course at Point Park. On Saturdays, I traveled to the other side of academia and worked as a teaching assistant at Duquesne in freshman English classes. I enjoyed the idea and practice of part-time teaching: It allowed for a stable job with the opportunity to teach, without the paper chase involved in seeking tenure. I discovered that I also enjoyed working on the staff side of academia and reconsidered the idea of pursuing a PhD in English, deciding that if I could teach part-time I could obtain the best of both worlds. I eventually earned my MA in 2000 and soon took a job at the University of Pittsburgh, working largely with students in the School of Arts and Sciences (the university's liberal arts school). Finally, I was experiencing my first significant contact with students in a school of liberal arts.

At about this same time I started studying in the EdD program in Higher Education Administration at the University of Pittsburgh; I soon switched into the Social and Comparative Analysis of Education (SCAE) program when I found that SCAE allowed me to address the historical and philosophical ideas that interested me in the field of higher education study. In addition, I started teaching freshman English at Pittsburgh as well.

Viewed from one perspective, my academic life seems like a well-designed plan: first I studied physics, then English, so I could eventually write about the Two Cultures issue. This of course would be untrue. I studied what I was interested in, through a process of dialogue with my academic interests, family needs, and economic concerns. This is why I entitle this section "One of My Stories"; any story I write of my life is just one of many narratives that will show something of interest. The story as told here hopefully provides insight into the context with which I examine my topic of study.

My life thus far has consisted of attempts to have it both ways; only recently have I come to understand how even though an individual may try to have hands in both fields, there are serious cultural and philosophical issues that have prevent the natural sciences and humanities from intermixing. The past few years of my life have been dedicated to exploring those issues, from considering how these conflicts are useful to those fields' maintenance of their boundaries to examining how interdisciplinary dialogue can take place. This dissertation is a result of that study—a study about my view of and place in higher education.

1.2 THE TWO CULTURES PHENOMENON IN MY EXPERIENCE

What I had experienced in my education and career has been called the Two Cultures phenomenon. The term Two Cultures refers to a now-famous lecture given in 1959 by British novelist and scientist C. P. Snow, based on an article he published in 1956 in the magazine *New Statesman.* In the lecture he describes a division that he perceives between humanistic and scientific life in academia and outside of it: He says that the "intellectual life of the whole of western society is increasingly being split into two polar groups" (1998, p. 3), a tragedy that is leading to "practical and intellectual and creative loss" (p. 11). Snow acknowledges the danger in dichotomizing the intellectual world, and even considers writing about the "Three Cultures" (the human or social sciences providing the third category), but he values the simplicity of his original model, considering it useful to explain the way he sees Western culture. Snow sees the solution in education, and he admires the relative breadth provided by the American system of secondary education in his day (p. 18).

In 1996, I was delighted to see the issue being raised again—albeit, in an unlikely location. Alan Sokal, a professor of physics and a critic of the intellectual culture of the literary left, submitted a paper (1996a) to the humanities journal *Social Text*. The article purported to analyze modern science through a postmodern lens. As science, the article was nonsense. However, it was accepted and published anyway. In a subsequent article in the journal *Lingua Franca* (1996b), Sokal revealed his hoax, claiming that publication of his paper proved his concern that the literary culture was at best sloppy and at worst built upon empty jargon. He went on to argue that the literary culture was in desperate need of the intellectual rigor that the scientific culture employed. Those who disagreed with Sokal saw his paper as an example of interpretive misunderstanding from the scientific culture. They argued that the humanities had

their own—albeit different—methods for providing intellectual rigor. I enjoyed going to see Sokal debate Stanley Aronowitz about the hoax at the University of Pittsburgh that year.

When I started working at the University of Pittsburgh Honors College, I became familiar with the Brackenridge Undergraduate Research Fellowship, where I saw the issue emerge again. The Brackenridge Fellowship consists of an interdisciplinary summer research program where roughly 50 students conduct independent research projects (under the guidance of a faculty mentor) and meet weekly in a large group to present their work. Loosely modeled on the interdisciplinary Harvard Society of Fellows, Brackenridge funds equal numbers of student researchers in the humanities, social sciences, and natural sciences. To my surprise, some of the students participating in the program were asking the same questions as Snow had fifty years ago.

One of the essential points of the Brackenridge Fellowship is that the students are required to present their research to each other, in the hope of developing an interdisciplinary intellectual community. The Honors College has no membership—just participants—so students who participate in the Honors College self-select or are advised to participate by academic advisors on campus, but no one who participates is required to do so. Those who win the Brackenridge Fellowship come from many different disciplines and often do not know each other before the program begins, as they are selected based on their applications, transcripts, and letters of faculty support.

Once a week and over a several-day-long retreat, the entire Fellowship gets together for presentations by their members. Presentations are followed by a question-and-answer period with the other students, most of whom know little about each other's fields. In one afternoon, the topics of the presentations might range from the poetry of William Carlos Williams to Soccer

Culture to Quantum Computing. The key to successful presentations is that presenters must not only reach out to an audience that is mostly unfamiliar with their field, but they must also answer the "So what" question: Why is their work needed in their field? Questions generated in official (and in casual) discussions touch on issues raised by Snow and Sokal: "Why is this important to your field?", "Why is this a valid question to ask?", "What is the acceptable mode of asking this question in your academic community?", "Why does that make sense as an answer to your preliminary question?", and even "How can you get away with getting funding for doing that?" In the way it contends with these issues, the Brackenridge Fellowship is an important example of a group of people contending with the problems of interpretation in the tradition of the Two Cultures discussion.

The writings of Snow and Sokal, as well as the questions that appear each summer in Brackenridge, imply that there is an (at least) "Two-Cultures" issue in the undergraduate experience of academia. Some feel that the process Snow outlined has continued among faculty as well, and that the modern American university of super-specialized academic communities has further developed into nothing more than "a series of individual faculty entrepreneurs held together by a common grievance over parking" (Kerr, 2001, p. 15). Even though colleges and universities usually require students to take courses from across the disciplines through some form of general education, it is a question of concern for the history and organization of higher education when faculty members from disparate disciplines, and just as importantly, their students, have difficulty understanding each other.

Sometimes the confusion is caused by jargon: Lack of understanding of basic terminology leads to lack of understanding of larger disciplinary issues. However, what is a more

interesting problem to me is when smart people using unspecialized vocabulary still cannot understand each other and cannot reach across the gap.

It would be a mistake to state that the student interactions in Brackenridge represent an unproblematic example of a Two-Cultures conflict. The error would be in arguing that undergraduate researchers are already so socialized into their intellectual fields that they have adopted the intellectual culture of their disciplines, and because of this, they are unable to access the interpretive framework needed for understanding the academic culture of another. And yet, even with these undergraduate researchers, the Two Cultures issues seem to appear. It is through this observation that insight into the problem develops: Two-Cultures misunderstandings are an interesting subspecies of phenomenon best described as hermeneutic. Hermeneutics is the study of interpretation (Grondin, 1994), and it is within this field that lies the most promising theoretical basis for research on the intellectual conflicts of this sort in academia. As I explain more fully in Chapter 2, I base my understanding of hermeneutics in the work of philosopher Hans-Georg Gadamer (1900-2002). By focusing on interpretation, the present study attempts to understand the Two Cultures phenomenon as it presents itself in Brackenridge, as well as understand what it is like for the students to experience it. Thus, the purposes of this study are twofold: hermeneutic ("What are the conditions under which this human act takes place that makes interpretation of meaning a challenge?") and phenomenological ("What is the meaning, structure, and essence of the lived experience of this phenomenon for these people?") (Patton, 2002).

1.3 RESEARCH QUESTIONS, METHODOLOGY, AND CONCLUSIONS

The research questions of this study are as follows:

1. What are the conditions under which this human act takes place that makes interpretation a challenge in a Two Cultures event?
2. What is the meaning, structure, and essence of the lived experience of the Two Cultures phenomenon for these people?

Using the philosophy of Gadamer, these questions can be broken down into helpful sub-questions:

- *What unspoken questions do the students seem to be attempting to answer in the Brackenridge Undergraduate Research Fellowship?*
- *How does tradition seem to be operating in these interpretations? Do the subjects seem to be aware of it? In what way are norms advocated that overlook the importance of tradition?*
- *How are prejudices operating? How do participants see them operating? How do participants overlook their operation?*
- *How is authority conceived of by these participants? How do different academic traditions operate under the influence of these conceptions?*
- *How do these participants conceive of knowledge? How do different academic traditions operate under the influence of these conceptions?*

These questions guide the analysis to help understand the texture of the Two Cultures experience. Using the methodology of hermeneutic phenomenology, I interviewed nine student

Fellows and held a focus group with six of them to develop answers to these questions. Students were selected purposefully for the interviews and focus group.

Chapter 2 is a discussion of the methodology of this dissertation, hermeneutic phenomenology. Hermeneutic phenomenology is a qualitative methodology that combines the study of interpretation (hermeneutics) with the study of human consciousness (phenomenology). Through a combination of these traditions, a methodology emerges that acknowledges the researcher as an implicated part of the subject of the study, working to see what the conditions are under which the phenomenon under study emerges.

Chapter 3 introduces the Two Cultures phenomenon in academia. This chapter shows how the idea of two sides to academia is at least as ancient as classical antiquity. In addition, it shows how the phenomenon has been examined in different ways by different research traditions. Chapter 4 is a brief introduction to the Brackenridge Fellowship and to the students who participated in the study.

Chapters 5, 6, and 7 are analysis chapters concerning observations about the disciplinary divisions of natural sciences, humanities, and social sciences, respectively. These chapters also explore various Two-Cultures conflicts that occurred during the study.

Chapter 8 contains the study conclusions, which are a description of qualities of the Two Cultures phenomenon and an exhortation to consider these events teachable moments in a well-developed liberal education. The significance of the study is in how it demonstrates the educative possibilities in Two Cultures conflicts. The Two Cultures phenomenon is not an isolated aberration; it is fundamental to any community that combines the natural sciences and humanities today. Students in the natural sciences generally consider their outlook objective and students in the humanities consider their outlook subjective. However, these perceptions are

overgeneralized at best and harmfully false at worst. These perceptions do help to bind these academic communities together, as they partially define themselves by using each other as counter-examples. Gadamerian hermeneutics helpfully provides some guidance as to how true conversation can be realized.

In addition, the Two Cultures phenomenon in the social sciences is known to people in that intellectual community as the methodological dispute. It is as fundamental to this field as the traditions that make up the natural sciences and humanities. Given the way that the social sciences are always already in a Two Cultures conflict, it is this disciplinary division, combined with insights from the humanities, that can best illuminate the Two Cultures phenomenon.

This study has significance and provides implications for both conceptual and practical issues. Conceptually, Gadamerian understanding (imagining a question that can be answered by the topic of study) provides an unorthodox model for conceiving knowledge and being that provides justification for qualitative modes of understanding. Gadamer's conceptualization also leads to important ramifications for the concept of academic (and human) identity.

There are clear practical implications from this study for the Brackenridge Fellowship, for liberal education, and for academia more generally. For the Brackenridge Fellowship, one recommendation is to address directly the democracy of disciplines implied by the structure and funding of the program. Positions on this issue could provide an engaging discussion or debate and a teachable moment for the Brackenridge community.

For liberal education, colleges and universities could consider general education programming beyond the traditional requisite of requiring several courses in different subject areas. Without an examination of how the structure of general education implies value judgments of academic disciplines and how these fields have ideas that are perceived as conflicting with

each other, an important teachable moment is missed. Gadamerian hermeneutics helpfully provides guidance as to how a truly educational conversation can be realized with these issues, through examining the way that traditions are enacted in academic disciplines. In academia, if institutions are serious about encouraging undergraduates to engage with liberal education instead of fulfill menu choices, they could encourage interdisciplinary work and consider it in tenure and promotion decisions.

For the future, another population in which to examine the Two Cultures conflict is academic faculty. Occasionally Brackenridge Fellows doing interdisciplinary projects have research mentors from different academic fields, and conversations in these committees could provide insight into the issue. In addition, the project of a workshop, seminar, or course that examines intellectual history, tradition, and community would do much to educate students. Research is required to explore what benefits it could provide and what difficulties would ensue if it were provided at different points in a student's education.

1.4 A CAVEAT AND DANGER

It is my contention that Gadamerian hermeneutics provides a fruitful perspective for illuminating the Two Cultures conflict. However, it is critical to note a point about epistemology in the Gadamerian framework. Gadamerian hermeneutics starts with an unorthodox view of the concept of understanding. Instead of understanding being a correct mental mirroring of the outside world, Gadamer sees it as a coming-into-being. He sees understanding and interpretation as different sides of the same phenomenon. All understanding is part of a process of dialogue between the knower and the unknown: "Knowledge is dialectical from the ground up" (2006, p.

359). Furthermore, understanding means learning what something means to oneself. “In the last analysis, *all* understanding is self-understanding” (1962/1976, p. 55, emphasis original). These two seeming innocuous quotations pose a special difficulty for the researcher trying to use hermeneutics in a study.

Gadamerian hermeneutics is dynamite in the hand. Understanding is dialogue? This is unorthodox but not terribly world-changing. All understanding is self-understanding? Again, this is not the traditional model of understanding given by analytic philosophy, but it can be adopted without much concern. But even though a dissertation is a dialogue with theorists, traditions, study subjects, advisors, and others, it is largely a solitary activity. Therefore, much of the process of a Gadamerian study is self-dialogue, or, to be more crude, “talking to myself.” Interpretation is a process with no clear endpoint. There is no number of interpretations that indicates to a researcher that it is time to stop. Moreover, any interpretation can itself be interpreted. The hermeneutic circle can be an infinite loop. Luckily, the time given to complete a dissertation is not infinite, and so this particular hermeneutic investigation pauses at a reasonable point to present its current state of understanding.

2.0 METHODOLOGY

Methodology chapters usually serve the primary purpose of elucidating the theory behind what methods were used to examine the subject of the study, which is one of the aims here. In addition, though, since this study concerns academic theories and methods (which lead to and are developed out of academic cultures), this methodology chapter also provides helpful background on the academic traditions that lead to the Two Cultures phenomenon itself.

This study brings the methodology of hermeneutic phenomenology, as influenced by the hermeneutic theories of Hans-Georg Gadamer, to bear on the Two Cultures phenomenon. I came to this perspective for this study because in order to examine the Two Cultures issue, I wanted to find common ideas and actions to compare and contrast between academic fields. One thing common to all disciplines is the phenomenon of interpretation. All disciplines interpret, whether the object of that interpretation is believed to be the natural world, data, people (other knowing subjects), individual or social phenomena, texts, or other interpretations. As cultural anthropologist Clifford Geertz (1983) writes, the mental work that is similar among scholars in very different fields can be obscured with too much focus on the divisions between academic fields.

> Grand rubrics like “Natural Science,” “Biological Science,” “Social Science,” and “The Humanities” have their uses in organizing curricula, in sorting scholars into cliques and professional communities, and in distinguishing broad traditions of intellectual style….

> But when these rubrics are taken to be a borders-and-territories map of modern intellectual life, or, worse, a Linnaean catalogue into which to classify scholarly species, they merely block from view what is really going on out there when men and women are thinking about things and writing down what it is they think. (p. 7)

It is for this reason that utilizing hermeneutics (the study of interpretation) provides a productive perspective on the issue.

Therefore, this chapter will do the following: lay out the general aspects and context of social science research in which hermeneutic phenomenology resides, examine hermeneutic and phenomenological theory before Gadamer, explain Gadamer's contributions to the field, provide explanations of how scholars see hermeneutic phenomenology as a useful methodology, and present the research protocol of this particular study.

2.1 HERMENEUTIC PHENOMENOLOGY IN THE CONTEXT OF THE SOCIAL SCIENCES

In order to understand hermeneutic phenomenology, it is important to first contextualize it within the diverse research traditions of the social sciences. Michael Crotty, in *The Foundations of Social Research* (2003), presents a useful model for explaining the complex aspects of research in the social sciences; the model is useful for understanding the position of this dissertation as well as aspects of the Two Cultures issue itself.

For Crotty (2003), social science research has five aspects: ontology (theory of the nature of reality), epistemology (theory of the nature of knowledge), theoretical perspective (philosophical stance informing the methodology), methodology (strategy, plan, process, or

design behind the methods), and methods (techniques or procedures to be used). It is normal to find common associations between these elements of research. For instance, in social science research that strives to fit a scientific model, it is common to find realism (ontology), objectivism (epistemology), positivism (theoretical perspective), survey research (methodology), and sampling (method). However, one element of research does not inevitably require another; for example, although realism (an ontology) and objectivism (an epistemology) are often found together, it is not logically necessary that one's conception of the nature of reality (ontology) must imply a specific perspective on what it is possible to know (epistemology). The social sciences have a range of ontologies, epistemologies, theoretical perspectives, methodologies, and methods that are considered valid by their practitioners. Since there are so many possibilities in the social sciences, and since the debate about whether the social sciences are best modeled on the natural sciences or humanities is not decided, research in the social sciences tends to be very self-aware about theoretical issues. Research in the natural sciences (with the possible exception of quantum physics) rarely debates issues of ontology or epistemology.

There are two main research traditions in the social sciences. The first, usually described as quantitative, sees itself as more or less modeled on the methods and worldviews of the natural sciences. The second tradition, which is the tradition of this study, is called qualitative or interpretive, and is more aligned with the methods and worldviews of the humanities. There is some question of whether "qualitative" or "interpretive" is the best adjective to describe this tradition, since sometimes qualitative data can be counted and measured in a quantitative manner (Lincoln & Guba, 1985). Crotty (2003) suggests using terms like objectivist/positivist research on one hand and constructionist/subjectivist research on the other, because of the way qualitative and quantitative are terms that draw focus to method and conceal the more fundamental

epistemological differences between traditions (pp. 15-16). For this dissertation the term qualitative will be used instead of interpretive to designate the research tradition, so when I use the word interpretive there will be no confusion as to whether I am referring to the name of the research tradition or the idea of interpretation itself.

Qualitative research encompasses a wide range of perspectives, but research in this tradition tends to have the following qualities: It situates the researcher in the world instead of trying to objectively separate from it, it focuses on approaching the world naturalistically in order to represent and interpret the world as observed, and it studies things in their natural settings, attempting to interpret phenomena in terms of the meanings people bring to them. (Denzin & Lincoln, 2003, pp. 4-5). Hermeneutics and phenomenology are more commonly found among qualitative studies, as their perspectives do not generate results that are usually meant to be statistically generalizable to larger populations.

Examining a human phenomenon that is essentially about understanding suggests that the qualitative theoretical perspectives of hermeneutics and phenomenology can be fruitful. In order to understand these perspectives, it is important to review their history.

2.2 HERMENEUTICS, PHENOMENOLOGY, AND HERMENEUTIC PHENOMENOLOGY BEFORE GADAMER

This chapter section begins by examining the early history of hermeneutics (since hermeneutics is older than phenomenology), then traces the birth of phenomenology, and finally demonstrates how these theories come to be intertwined. But first, it may be useful to briefly introduce both

traditions together to see their overlap and tension. Originally both fields had conservative goals, but now the fields are more diverse.

Hermeneutics is the study of interpretation. The original goal of hermeneutics was to allow readers to discover the true meaning of religious texts. In addition to being a theoretical perspective, hermeneutics can also be described as a movement or tendency designating a set of general concerns. All of these concerns focus on describing how interpretation is and sometimes should be done, and what the goals of interpretation are or should be. Hermeneuticists examine and sometimes prescribe the ways that people create meaning from texts and actions; for example, a hermeneuticist could examine how knowledge of Shakespeare's biography might influence a reader's interpretation of *Hamlet*. Hermeneutics has both normative and descriptive elements: Some theorists see it is a set of methods for interpreting correct meaning or meanings of a text, group of texts, or action; others see it not as a guide of how to interpret, but instead an analysis of how interpretation is in fact practiced (Grondin, 1994, p. 18.). Both the prescriptive and descriptive elements of hermeneutics have relevance and use in the social sciences.

Phenomenology, on the other hand, is the study of human consciousness. Phenomenology historically emerged with a goal of achieving scientific understanding of human experience. Phenomenologists, broadly speaking, try to bring understanding to human experiences that are not measurable outside of human experience; examples might include the experiences of loneliness, jealousy, or anger (Patton, 2002, p. 104-105). A phenomenological study of grief might examine that concept using interviews with various subjects who have experienced it, attempting to draw out some general understanding of the phenomenon. Early phenomenologist Edmund Husserl's (1954/1970) informal motto was, "Back to the things themselves!" (*Zurück zu den Sachen selbst!*). His goal was finding an objective view of human consciousness. He was

attempting to rescue the subject of human consciousness, and thus concepts like aesthetics and perception, from being conceived of as merely subjective.

Both hermeneutics and phenomenology originally started with conservative goals in mind. In the postmodern era, hermeneutics functions equally well under hard or soft worldviews, whereas phenomenology still has strong ties to its positivistic roots. Hermeneutic studies examine the question, "What are the conditions under which a human act took place or a product was produced that make it possible to interpret its meanings?" This question does not imply an ontology or epistemology. Phenomenological studies, on the other hand ask, "What is the meaning, structure, and essence of the lived experience of this phenomenon for this person or group of people?" In this question, *essence* is a word with realist connotations (Patton, 2002, pp. 113 & 104). Therefore, hermeneutic phenomenology can seem like an oxymoron. However, through an examination of history, theory, and practice of these traditions, a middle road can be found by which the contributions from each view can strengthen the other.

2.2.1 Hermeneutics before Phenomenology

The history of hermeneutics is helpfully illuminated by Jean Grondin's *Introduction to Philosophical Hermeneutics* (1994), demonstrating the diverse set of hermeneutic positions that have been considered valid over the years. Originally, hermeneutics referred to theories used for interpretation of religious texts, especially in the Judeo-Christian and Greek tradition. Textual interpretation may seem like a simple matter—just reading and interpreting what words are there. However, interpretation gets complicated very quickly. (Also, in the case of scripture, the stakes are incredibly high: When a religious text is viewed as holding the truth, there is little margin for error.) Complicated decisions must be made. For example, should a scriptural story be taken as a

literal representation of what actually happened in the past, or might a story be an allegory meant to represent a higher truth by presenting an apocryphal narrative? Decisions about this interpretation issue then can lead to radically different theological understandings, and thus different (conflicting) beliefs about right behavior and ritual.

Grondin (1994) provides a thorough history of hermeneutics. He traces the history of early hermeneutics to Philo of Alexandria (20 BCE-50 CE), generally considered the father of allegory, who was an Egyptian author in the Greek Jewish tradition. Philo's work struggled to account for apparent discrepancies in the Hebrew Bible. He believed that the only way to make sense of the contradictions in Jewish scriptures was to see some stories as allegorical and not literal. Later Christian theologians such as Origen (185 CE-254 CE) adopted Philo's allegorical readings of the Jewish Bible in order to make sense of scriptural predictions about the messiah that did not match with beliefs about the historical life of Jesus. The shift was significant for hermeneutic and theological as well as organizational reasons for the new Christian church: Now, scriptural texts were not considered universally accessible on their surface level and needed an interpreter. Henceforward, assigning interpretive duties to the clergy and church was necessitated. Centuries later, St. Augustine (354-430) further advanced the belief in allegorical, nonliteral readings of scripture.

The rise of the Protestant Reformation posed a new challenge to biblical hermeneutics. Indeed, the historian of hermeneutics Wilhelm Dilthey (1833-1911) traces the birth of hermeneutic *science* to the Reformation. The doctrine of *sola scriptura*, or "only scripture" in the theology of Martin Luther (1483-1546), meant a return to literal reading and interpretation and a movement away from relying on priestly interpretation that relied on a mix of tradition and scripture. As a counter-attack, the Catholic Counter-Reformation used the differing

interpretations of various Protestant sects as evidence for the success (unity) of its own hermeneutic theories.

Another important figure in the history of hermeneutics is the German professor of theology Friedrich Schleiermacher (1768-1834). He advocated interpretation based on recovering authorial intent: The interpreter seeks "to transform himself, so to speak, into the author" (2006, p. 96). The goal here is to recover what the author originally meant to say. Schleiermacher's hermeneutics is today considered extremely conservative by hermeneuticists. However, even more significant is Schleiermacher's emphasis on the importance of misunderstanding. Traditional Catholic and Protestant hermeneutics had held that understanding generally comes easily to people, unless they are faced with some barrier or contradiction (such as allegory). Schleiermacher turned this conception around and stated that misunderstanding was the normal and natural state. This has been called the "universalization of misunderstanding" (Grondin, 1994, pp. 67-68). Henceforward, expert interpreters, though rejected by Protestant hermeneutics, receive a new endorsement in the age of Romantic hermeneutics.

The history of early hermeneutics does not demonstrate unidirectional progress; as can be seen from looking at several eras, different hermeneutical strategies have been called for in different historical eras for political, religious, and social reasons. What this brief passage through the history of early hermeneutics does reveal, however, is the diversity of interpretive strategies—all considered valid by their practitioners—available in different times. People called upon these strategies in order to accomplish their aims, just as they do today. Knowing about this diversity is helpful in studying interpretation in this contemporary study.

2.2.2 Early Phenomenology

Before going further with a history of hermeneutics, it is helpful to turn back to phenomenology, which began to develop in the late nineteenth century. Modern phenomenology traces its roots to the work of Edmund Husserl (1859-1938). Husserl inaugurated what is commonly known today as transcendental phenomenology, or the description of human phenomena (as mentioned above, human phenomena might include loneliness, jealousy, or anger). Husserl sought a logical and scientific method of discovering the experience of human consciousness and experience. To accomplish this, he utilized several special concepts: intentionality, life-world, and *epoché*.

Husserl's definition of intentionality is not the definition most often used today, when it is understood to be the desired (intended) meaning of the behavior of a speaker, author, or actor (Husserl, 1931/2004). Instead, intentionality for Husserl refers to the way that consciousness occurs. Consciousness (or more specifically, thinking) is not an isolated activity: One cannot just think, without thinking *about* something. The same goes for beliefs and desires: They are emotions that are always about something else. This "aboutness" is what intentionality concerns itself with—indeed, sometimes "aboutness" is used as a synonym for Husserlian intentionality. If thinking, believing, and desiring are always connected to something outside of the self, then a new way of looking at the human world is needed. Instead of dividing up knowledge of the world into objects and ideas (which works for analytic philosophy), Husserl divided it up into human perceptions of those objects and ideas. This epistemological move is an attempt to overcome the Cartesian subject/object split in modern philosophy. The epistemological world for Husserl is not made up of objects and ideas addressed by an independent knower, but is instead made up of consciousness of those objects and ideas.

Another important idea for Husserl (1954/1970) is that of the life-world (*Lebenswelt*), the world "as lived" prior to reflection or analysis. This concept is a way of emphasizing the centrality of perception in the human experience. Husserl's method for achieving knowledge about these perceptions would be achieved by separating one's prejudices and beliefs from the perception of the phenomenon—including, for example, the belief in the existence of the thing perceived. What is important is the reality of the perception, not the reality of the thing. He calls this process of setting aside prejudices bracketing or *epoché* (Husserl, 1931/2004) (Greek for "cessation"). Bracketing would theoretically allow one's consciousness to ascertain the essences of the phenomena in question. The idea of bracketing assumes persons can separate their pre-understandings from their lived experiences.

What Husserl inaugurated was a movement away from the isolated, Cartesian knower-subject to a knower who is intimately involved with the objects that are known. Max van Manen (1997) elaborates how this idea connects knowing with being in the world. He explains,

> to *know* the world is profoundly to *be* in the world in a certain way, the act of researching—questioning—theorizing is the intentional act of attaching ourselves to the world, to become more fully part of it, or better, to *become* the world. (p. 5, emphasis original)

Thus, a researcher in the Husserlian tradition is not an isolated subject coming to know objects. Instead, the researcher enters into a mode of being *with* the phenomenon under study.

A handy example of these terms is provided by the present study. In the interview and focus group, students often make comments concerning their thoughts and feelings about academic fields, and these comments are usually contextual. In other words, instead of saying, "Science is X," they say something like, "Science is X in relation to me." Separating the speaker

from the perception they speak about, then, would break apart a complete phenomenon and be unjust to the intentional experience under study. What is important for this study is not just the thought; just as important is the context of that thought and the person reporting it. This is one of the most important ways that phenomenology contributes to social science research—by allowing the subject-object pair to stand as a fundamental unit of analysis. If my methodology had been transcendental phenomenology instead of hermeneutic phenomenology, I would have then tried to obtain an understanding of the life-world of these students by progressively bracketing their and my prejudices until the truth of the phenomenon revealed itself to me.

The possible extent of this bracketing is one of the areas in which traditional phenomenology conflicts with the philosophy of Husserl's pupil Martin Heidegger (1889-1976), who saw prejudice and pre-understanding as necessary to the process of understanding. In addition, Heidegger's philosophy tied phenomenology and hermeneutics together, finally intertwining these two threads so important to the research tradition of hermeneutic phenomenology.

2.2.3 Heidegger: Combining Hermeneutics and Phenomenology

Husserl had sought a logical method of describing the essence of human consciousness and lived experience, but Heidegger shifted this focus. Primarily, this shift was a turn from epistemology to ontology. Both philosophers were concerned with human understanding but for different reasons. Husserl focused on the concept of human understanding to better examine the limits of human knowledge, but Heidegger focused on the concept of understanding to examine the reality of human being. As Gallagher (1992) explains,

> For Heidegger, understanding is essentially a way of being, the way of being which belongs to human existence…. Being-in-the-world is not primarily a cognitive relation between subject and object, although being-in-the-world is a way of existing which allows there to be cognition. Human existence discloses the world, or is in-the-world by way of an understanding that functions on all levels of behavior, conscious or unconscious. (p. 42)

This move extended Husserl's philosophy to cover more of the human *Lebenswelt*. For Heidegger, the fact that humans exist *in the world* is not just an interesting side note to the description of existence. As human-beings (the hyphen is critical), humans are inseparable from their being-in-the-world (or *Dasein*). As a person (and therefore "in-the-world"), one cannot be separated from it.

One of the aspects of being-in-the-world is that a person's arrival in it is not a blank-slate experience. The interpreted world exists before a person gets here. A person is "thrown" into a world that already exists, and so he or she does not have control over some aspects of his or her existence. Some examples of "thrownness" (*Geworfenheit*) include gender, culture, and history—all areas of life-context over which a person does not have initial control. This thrownness prohibits purely objective viewpoints. The meanings that people create are developed through their experiences and background. However much people become aware of their assumptions and prejudices (and Heidegger *did* believe that people could become aware of many of them), those assumptions will still be involved inseparably with the way that people find meaning. Therefore, epistemological objectivity is impossible. The positive side, though, is that pure objectivity is also unnecessary: All understandings are to some degree subjective. This

perspective has serious ramifications for concepts like prejudice, which Gadamer develops more fully, as explained in the next section.

Heidegger is one of the philosophers famous for making the so-called “linguistic turn” of philosophy in the twentieth century: namely, a focus on the relationship between philosophy and language. Until the linguistic turn, language was often thought of as a conduit for transmission of statements about the world. Instead, for those who take into account the linguistic turn, language has a part in constituting the world.

Another critical addition that Heidegger brought to hermeneutics was his reversal of the concept of interpretation. Before Heidegger, hermeneutic theories had one thing in common: The belief that process of interpretation consisted of people interpreting in order to understand. Interpretation was a tool that people picked up, used, and put down after the work of understanding was done. Heidegger turned this conception around, arguing that people *understand to interpret* (and then they understand more). In other words, people cannot interpret something if they have no understanding, no set of categorizing concepts, through which to interpret it (Grondin, 1994, p. 96). So for Heidegger, the normal process of learning and being is not a matter of putting facts into one’s head: The normal learning and being process consists of existence in a dialectical relationship with the world, always with some pre-understandings, always using them to understand more.

This is a difficult concept since it turns understanding and interpretation inside-out. One way of making it clearer is through Heidegger’s concept of the “hermeneutic circle.” Heidegger introduced the idea of the hermeneutic circle as a way to explain what seems like a paradox in learning. It is often impossible to see why a certain fact is important without first knowing the big-picture organizing system that contains it; however, one cannot learn about the big-picture

organizing system until one learns the facts that make it up. Somehow, learning does take place through a dialectical process between parts and whole. As Crotty (2003) explains,

> in order to understand something, one needs to begin with ideas, and to use terms, that presuppose a rudimentary understanding of what one is trying to understand. Understanding turns out to be a development of what is already understood, with the more developed understanding returning to illuminate and enlarge one's starting point. (p. 92)

It is the same way with human beings and the world. People do not come to the world as clean slates; they come with concepts and interpretation systems that have been handed down to them by others.

For Heidegger, there is no end to the hermeneutic process of understanding. However, starting with a clear perception of the task at hand can make it more successful. As Heidegger says, "what is decisive is not to get out of the circle but to come into it the right way" (1927/1962, p. 195). This study, again, provides an illuminative example. I find that my interview data concerning perceptions of the natural sciences, humanities, and social sciences relate to each other almost constantly. One comment will compare epistemologies of the natural sciences and humanities; another will examine the utility of the humanities as compared to the social sciences. Understanding the whole Two Cultures phenomenon (in the context of the big-picture structure of academia) is impossible without learning some of the constitutive parts (issues) involved in it. However, it is impossible to understand the parts without a sense of how they fit into the whole picture. In seeking to examine conflicts between the natural sciences, humanities, and social sciences, I had to decide what order to examine them in, even though

there was no obvious discipline from which to start, and every beginning was always going to be an imperfect start.

After Heidegger, hermeneutics is no longer an art or science of perfecting understanding. It is not only a theory of understanding; it is understanding itself. In other words, the gap between interpretation and understanding is closed. These concepts are merely different sides of the same idea. Interpretation and understanding feed into each other in a never-ending hermeneutic loop. And in a reflexive turn, interpretation itself is itself subject to matters of hermeneutics (Grondin, 1994, p. 98). This reconceptualization of interpretation and understanding, as well as the reflexive turn it creates, is critical for those who build on Heidegger's work, like his student, Hans-Georg Gadamer.

2.3 HANS-GEORG GADAMER

Among those who build on and explicate Heidegger's theories is the philosopher Hans-Georg Gadamer. Born in 1900 and dying in 2002, Gadamer is one of the lesser-known philosophical giants of the twentieth century, spending his early years studying with Heidegger and following him in the continental philosophical tradition. Gadamer's writings range from commentary on Plato to the purpose of education to trying to understand the world post-9/11; however, he is primarily known for his contributions to hermeneutics. His interests in how interpretation occurs in the context of human thrownness into language has led some to describe his view of hermeneutics as a "phenomenology of language" (Linge, 1976, p. xxviii), further binding the traditions of hermeneutics and phenomenology together.

2.3.1 Gadamer in Context

Contemporary hermeneutics is by no means a unified perspective, so before examining Gadamer's work in depth, it is important to see where Gadamer stands in the range of different current hermeneutic positions. In the contemporary intellectual environment, four main genres of hermeneutics have been delineated: conservative, moderate, critical, and radical (Gallagher, 1992). These four generalized positions delineate the major theoretical outlooks of the field today.

Conservative hermeneutics reaches back to the goals of early hermeneutics with the goal of arriving at objective truth. Theorists in this tradition include legal historian Emilio Betti (1890-1968) and literary critic E. D. Hirsch (1928-). These theorists recall Schleiermacher's goal in their belief that "The aim of interpretation is to reproduce the meaning or intention of the author by following well-defined hermeneutical canons that guide reading" (Gallagher, 1992, p. 9). Hermeneuticists in this tradition often have traditionalist or reactionary agendas and realist ontologies and epistemologies. To provide an example, conservative hermeneuticists reading this study would view the experience as successful and valid if they were able to reconstruct in their minds the thoughts that I had intended to communicate when I wrote the document.

Moderate hermeneuticists include Gadamer (1900-2002) and Paul Ricoeur (1913-2005). They argue that no method can guarantee objectivity because humans are conditioned by their historical existence, which includes certain prejudices that are not always available for expurgation. For example, people cannot think outside of language, and all languages contain certain preconceptions about what can be spoken. Meaning occurs, but interpretation can never reveal complete objective truth (disregarding the question of whether there *are* any objective truths). Still, Gallagher (1992) explains that in the views of these theorists, interpretation can be

still viewed optimistically (p.10). Interpretation is a creative or mediative process, not a reproductive one. Readers and observers create and mediate meaning out of the texts that they have access to. If readers understand what authors write, then the readers understand better, in a sense, because readers always change and add something to a text in order to understand it. It is in this sense that "Every understanding is a better understanding" ("*Jedes Verstehen ist ein Besserverstehen*") (Radnitzky, 1973, p. 221). Moderate hermeneuticists in reading this document would probably stay away from prescribing a method of reading and interpreting; instead, they would examine how different interpretations of this document would be defended by invoking different traditions.

Critical hermeneutics is best represented by the work of critical theorists Theodor Adorno (1903-1969), Max Horkheimer (1895-1973), Karl-Otto Apel (1922-), and Jürgen Habermas (1929-) from the Frankfurt School of social criticism. Authors in this school often draw their work out of the theories and traditions inaugurated by Sigmund Freud (1856-1939) and Karl Marx (1818-1883). Gallagher (1992) explains that for these authors, hermeneutics is a tool that can be used to unmask human-experienced reality for the goal of emancipation from false consciousness. For this reason, this tradition has been called the "hermeneutics of suspicion" (Ricoeur, 1970). Also, Gallagher explains that however progressive its goals, critical hermeneutics is conservative to the extent that it believes that false consciousness can be overcome, given the right hermeneutical method (p. 11). Critical hermeneutics sees itself as the perspective that can accomplish this aim. A critical hermeneuticist might examine the ways in which false consciousness operates in my study and the ways in which my personal psychological or socio-economic state led me to, intentionally or not, advocate ideas that reinforce repressive aspects of the status quo.

Finally, radical hermeneutics is practiced in the work of philosopher Jacques Derrida (1930-2004) and theologian John Caputo (1940-). For these theorists, interpretation is more of a dance or expression of play than a way to reach a truth that is beyond the texts people employ to find truth. Interpretation is a creative process with no specific endpoint. This form of hermeneutics is what is most often critiqued in descriptions of relativistic postmodernity. For these authors, the best interpreters can do is to stretch language to produce new insights. Despite the concerns of conservative anti-relativists, Derrida's (1976) statement that "There is nothing outside of the text" (p. 158) does not have to imply that there is no material reality; it merely calls into question the division between text and real world. Indeed, Derrida (1988) rephrases his often-quoted statement later as "there is nothing outside context" (p. 136). Instead of seeing language as a mediation of experience and ideas (behind which the true things really exist), Derrida sees language as the fabric of human reality. A radical hermeneutical investigation (usually termed a deconstruction) of this document would examine the ways in which this dissertation speaks against itself, pointing out the ways my ideas are founded upon fundamental oppositions that are inherently unstable.

Gadamer's moderate position in hermeneutics shares similarities with some of the other positions. Like conservative hermeneutics, moderate hermeneutics has a strong respect for the idea of tradition. However, whereas conservative hermeneuticists see tradition as valuable because it is good, moderate hermeneuticists see tradition as valuable because it has a part in constituting people's lives in ways they can only ever be partly aware of. Also, like the radical hermeneuticists, moderate hermeneuticists shy away from the idea of correct interpretation. It is this odd mixture of respect for tradition and liberality in interpretation that allows Gadamer to begin his project: attempting to describe what happens in interpretation.

2.3.2 Gadamer's Project

Written in 1975, Gadamer's magnum opus *Truth and Method* further developed the Heideggerian tradition of hermeneutic thought. The book offers a critique of the post-Enlightenment obsession with method and attempts to work out a hermeneutics that is effective for the human or social sciences. The book's goal is not to find a prescriptive method that rivals the method of the natural sciences. Instead, Gadamer (2006) seeks to explore how interpretation in the human sciences can be understood in relation to interpretation in the natural sciences:

> I did not wish to elaborate a system of rules to describe, let alone direct, the methodological procedure of the human sciences…. My real concern was and is philosophic: not what we do or what we ought to do, but what happens to us over and above our wanting and doing. (pp. xxxv-xxxvi)

Gadamer is concerned that the methods of the natural sciences are seen as the only correct ways to truth. He argues that this is a "false transference" of the set of rules from one field to another (1963/1976, p. 175), which happens when fields outside of the natural sciences adopt scientific methodologies. Instead, the goal is to examine what could be a defensible strategy for the social sciences.

In order to begin addressing this question, Gadamer utilizes the German educational concept of *Bildung*. This word is often translated as "education" or "culture," but Gadamer's use of the term is usually translated into "formation" or "edification." Gadamer (2006) defines the word as "the properly human way of developing one's natural talents and capabilities" (p. 9). However, for Gadamer it is not a process of becoming cultured in the traditional sense: There is no pre-established model for this formation. *Bildung* for Gadamer is endless and not goal-directed. "Like nature, Bildung has no goals outside of itself" (p. 10). It will be seen later that

this growth is related to Gadamer's praise of humanistic experience. *Bildung* has deep roots in traditional Western humanism, and it is in this tradition that Gadamer sees the roots of the human sciences. Thus Gadamer can see the tradition of natural science, not as the pinnacle of epistemological achievement (under which the human sciences qualify at best as weak science), but as a *different* research tradition. The humanities, based in their tradition of growth, are the basis for the humanistic tradition in the social sciences.

2.3.3 Gadamer on the Natural Sciences

In order to understand Gadamer's thoughts on the methodology of the social sciences, it is first helpful to examine his thoughts on the natural sciences. He sees two main emphases that characterize modern scientific research: the rise of the standard of objectivity and devaluation of tradition as opposed to rationality.

Gadamer claims that the modern belief that objectivity is the criterion for good research occurred through the development of philosophy, aesthetics, and art. A critical point in this development came with Immanuel Kant's (1724-1804) philosophy. In order to separate aesthetic judgments from law and morality, aesthetic judgments were pulled out away from the center of philosophy, relegating them to the subject of "taste." In other words, Kant viewed aesthetic judgments as subjective. In this way, Kant's view discredits "any kind of theoretical knowledge except that of natural science" (Gadamer, 2006, p. 36). Gadamer explains that the development of Romanticism was another major force pushing art and science apart. Romanticism was an artistic movement that valued the ideas of artistic genius, art's separateness from the scientific world, and art that could not be generalized by a system of rules. Ironically, separating out art from philosophy removed much of art's cultural power.

Gadamer argues that as the natural sciences gained prominence, science's focus on method gained its ascendance. This method of finding truth consists of passing hypotheses through doubt. Gadamer traces how, just as Descartes' attempt to doubt everything resulted in his final indubitable assertion (that he exists), "methodical science fundamentally doubts everything that can be doubted in order to guarantee certainty of its results," admitting "only the validity of what cannot be doubted" (2006, p. 232). From this point, it is but a short distance to science's claims to universal knowledge: "The concept of knowledge based on scientific procedures tolerates no restriction of its claim to universality" (1962/1976, p. 54). It is difficult today to conceive of truth that does not come from science.

It may seem absurd to question the value of objectivity as a goal, but Heidegger and Gadamer argue that it only seems absurd because of our current historical value system. They explain that the focus of the natural sciences on method to obtain truth is largely a product of the ideas that gained their strongest formulation in the Enlightenment. No matter how valuable the Enlightenment has been, it is the role of hermeneutics still to attempt to uncover the sources of beliefs to more fully understand the interpretive process. The goal of hermeneutics, Gadamer (1966/1976b) argues, is to transcend our prejudices, not by removing them but by seeing how they might construct our world for us (p. 8).

Like many philosophers of science, Gadamer (1967/1976) rejects the possibility of interpretive objectivity due the individual, social, and historical factors involved in all natural sciences (e.g. issues such as the human choice of which problem to address, the economic factors leading to certain kinds of research, the human development of hypotheses, and so on). However, even if one does not reject the epistemology of objectivism, the belief in interpretive objectivity (just like all beliefs) involves important hermeneutic issues. It is in this light that Gadamer

examines interpretation in the sciences. Since his work is influenced by the phenomenological tradition, for Gadamer the presence of a human being's prejudices in any interpretation is a given. However, in the natural sciences, the human person doing the interpreting disappears. More importantly, awareness of those interests that led that person to conduct the study can disappear as well. Instead of objectivity, Gadamer calls this "methodological alienation" (p. 126). It is alienation insofar as the researcher removes him- or herself from the research. Evidence of this alienation can be seen in the cultural norm of using the passive voice in scientific laboratory reports and publications.

However, the natural sciences are not Gadamer's real target. He believes this alienation is of less consequence for the natural sciences than for the social sciences. He thinks most scientists are aware of just how limited their knowledge is, and they know that ethical questions about what to do with scientific results can never be answered inside the field of science proper. He also thinks that most natural scientists do not "share in the deification of his science that the public would press upon [them]" (1967/1976, p. 40). However, the social sciences are in a different position. The social sciences are more and more often called upon "for the purpose of scientific ordering and control of society," (p. 40), a society to which they belong. Yet they also share in this methodological alienation that the natural sciences employ. Therefore, they are less likely to ask important ethical questions about the purpose of their work.

Gadamer, like Heidegger before him, has an important place in his philosophy for prejudice. In fact, he seeks to redefine or re-invigorate a meaning of the word that it had before the Enlightenment, when it gained its negative connotation. He argues that before the Enlightenment all prejudice meant was a judgment made before all of the facts were known

(2006, p. 273). Since all of the facts (about anything) can never be known, all decisions are prejudicial. Gadamer makes normative the process of deciding with incomplete information.

Prejudice is treated by Gadamer not as a fundamental flaw in human being, but as the factor that *allows* humans operate in the world. People make meaning based on what they knew before, which is always incomplete. Gadamer (2006) blames the Enlightenment for the modern "prejudice against prejudice," the assumptions that prejudice is universally bad, that it can and should be rooted out of the modern mind (p. 273). (Gadamer's epistemological move also utilizes Heidegger's idea that understanding precedes interpretation.) Eliminating all prejudices, to Gadamer, is impossible. Furthermore, removing them would be unfaithful to the historical nature of human-being and crippling to a human trying to understand his or her world. This is not to say one should not attempt to know one's prejudices—only that removing all of them is impossible. It is because of this historical nature of understanding that Gadamer (2006) is able to make the radical claim that "*the prejudices of the individual, far more than his judgments, constitute the historical reality of his being*" (p. 278, emphasis original). Even though pre-understandings sometimes make understanding incorrect or difficult, it is also pre-understandings that allow and facilitate a human's ability to understand.

Of course, scientists would agree that thinking that one has removed all prejudice is a dangerous mistake. As Grondin (1990) explains, "For whomever pronounces himself or herself free of prejudices is all the more blindly exposed to their power. Prejudices will exercise their underground domination all the more strongly, and potentially distortingly, when denied or repressed" (p. 54). However, it is important under a Gadamerian view of understanding to not believe the goal is to exorcise as many prejudices as possible. Again, Gadamer's main target is not the natural sciences—it is the social sciences. He wonders if the belief in unprejudiced

scholarship in the social sciences is tenable. The social sciences, even more than the natural sciences, are not just a product of tradition but are the embodiment of it. He asks if instead of bracketing the history of the social sciences, social scientists should instead see their history and traditions hermeneutically—as that which enables understanding (2006, p. 283). The implications for social science research are that the prejudices of the researcher originate from the researcher's thrownness, and rather than being an impediment to knowledge-making, it is the subject's and researcher's prejudices and values that provide meaning. So rather than attempting to root out and destroy one's prejudices, a goal of Gadamerian hermeneutic research is to attempt to become aware of how the subjects' and the investigator's prejudices affect the process of meaning-making.

Gadamer explains that the valuable concept of working in a tradition has also been confused by the effects of the Enlightenment and Romanticism. He argues that the Enlightenment's focus on reason and freedom have distorted the very concept of authority. The concept of authority used by the Enlightenment is seen as "diametrically opposed to reason and freedom: to be, in fact, blind obedience" (2006, pp. 280-281). Romanticism also understands tradition as the antithesis to the freedom of reason. However, this is not authority as Gadamer sees it. Authority in Gadamer's sense is not blind obedience but rather has to do with knowledge. It is true that the authority of knowledge implies the capacity to command and be obeyed. However, Gadamer points out that this capacity to be obeyed *proceeds* from the authority that a person has. It is not itself authority. For Gadamer,

> Acknowledging authority is always connected with the ideas that what the authority says is not irrational and arbitrary but can, in principle, be discovered to be true. This is the essence of the authority claimed by the teacher, the superior, the expert. (2006, p. 281)

So just as with the concept of prejudice, Gadamer argues for a revitalization of the concepts of authority and tradition.

The Romantics would argue that participating in a tradition is a choice people make when they do not take advantage of their freedom to think for themselves. Tradition, it is falsely believed those under a Romantic conception, does not require any justification and controls its participants without their questioning it. However, Gadamer denies the antithesis between tradition and reason. There is always more than blind obedience in following a tradition.

> In tradition there is always an element of freedom and of history itself. Even the most genuine and pure tradition does not persist because of the inertia of what once existed. It needs to be affirmed, embraced, cultivated. It is, essentially, preservation, and it is active in all historical change. But preservation is an act of reason, though an inconspicuous one. (2006, p. 282)

For Gadamer, whether one is participation in or fighting against tradition, both require the use of freedom and reason. No one participates in what he or she would call a meaningless tradition. For example, I could imagine someone inventing a meaningless tradition in order to experiment with or mock the idea. However, that person would be participating in the traditions of experimentation or blasphemy, respectively. According to Gadamer, tradition is always there before one arrives.

2.3.4 Gadamer on Truth and Understanding

What, then, is Gadamer's view of truth? Philosopher Chris Lawn (2006, p.59) explains how Gadamer follows Heidegger in rejecting the orthodox view of truth defined as correspondence, representation, or adequation. For Gadamer, truth is not something that exists separately from

human experience of it. It cannot be captured and observed from an objective distance. This mistaken view of truth ignores the critical human element. Truth is something activated by an inquirer who always brings historical and linguistic prejudices to bear. Truth is not found: It is experienced. Gadamer's epistemology has been called "perspectival realism" (Wachterhauser, 1994, p. 154) by commentators who see him in the tradition of Friedrich Nietzsche's epistemological perspectivism.

This definition of truth as experience includes both scientific/empiricist truth and humanistic truth. There are two different words in German for experience that Gadamer uses to illustrate the difference between these kinds of experience: *Erlebnis* and *Erfahrung*. Scientific experience (*Erlebnis*) is considered true if it can be repeated reliably. Instead of being reliably repeatable, humanistic experience (*Erfahrung*) is true when it reveals something new about the world and the observer.

Gadamer likens true humanistic experience having a religious experience. It is "experienced not as a *loss* of self-possession, but as the free buoyancy of an elevation above oneself" (1962/1976, p. 55, emphasis original). It is the kind of experience one has when doing something new and surprising, after which one might say, "That was an experience!" When one is taken aback from normal daily life one has this kind of experience and thus this kind of truth (Lawn, 2006, pp. 61-62). These humanistic truths are repeatable as well when one re-experiences a piece of art or text, but however reliably repeatable they are, the thing that is different each time is the human observer, who changes with time. Therefore, the experience, and the truth, is different each time.

For Gadamer, all truth is a historical, linguistic, and social event. Therefore, the concept of truth utilized by foundationalist epistemologies and employed by the natural sciences is

misleading. Truth is the experience of a human (who is, of course, always in a historical context) with something outside of him- or herself. However, Gadamer is no subjectivist: There is a world outside of the self. The world, no matter the weaknesses of the language-medium we use to access it, does exist. The world is not an objective world and it is not a subjectively constructed world. It is a world of humans and non-human things and ideas in interpenetration.

Gadamer critiques subjectivity by tying it into his view of the limits of human experience: Interpretation is a communal, not an individual, activity. People interpret out of a menu of possible interpretive positions they are presented with. The ramifications of this position for interpretation are radical. For Gadamer, not even an author's opinion on interpreting his or her work should have precedence: "In truth, we may attribute a privilege to a poet in the explanation his verse just as little as we may attribute it to the statesman in the historical explanation of events in which he had an active part" (1960/1976, p.80). Authors, just as statesmen, are people under the influence of historical and social forces that they can only become partially aware of. From this position, Gadamer shows what kind of self-knowledge is available by comparing it to religious experience.

> The real concept of self-understanding that is … not to be conceived in terms of the model of perfected self-consciousness, but rather in terms of religious experience. Inherent in it is the fact that the false paths of human self-understanding only reach their true end through divine grace. That is, only thereby do we reach the insight that all paths lead us to our own salvation. All human self-understanding is determined in itself by its inadequacy. (p. 80)

It may seem strange to see Gadamer turn to the religious experience for his explanation, but there are commonalities to the interpretation of literary texts and religious experience. For Gadamer,

what is common to both is the impossible task constantly attempted in both communal experiences: seeking to transcend the self or community to obtain complete knowledge of something other. Whether the divine is God or knowledge, Gadamer's vision of wisdom is experience of both transcendence and its limitations.

For Gadamer truth is, critically, an experience of human limitation rather than of dominance: "Experience is experience of human finitude" (2006, p. 351). In learning, what one learns is always the *limitations* of knowledge. As Heidegger argues, humans are limited by their thrownness in the world, and Gadamer looks at the way that human thrownness into language specifically affects understanding. Heidegger says, "Language is the house of being" (1977, p. 193), and Gadamer restates Heidegger's idea with the statement, "*Being that can be understood is language*" (2006, p. 470, emphasis original). Michael Crotty (2003) expresses succinctly the way in which language is part of the human experience:

> We are essentially languaged beings. Language is pivotal to, and shapes, the situations in which we find ourselves enmeshed, the events that befall us, the practices we carry out and, in and through all this, the understandings we are able to reach. (p. 87)

People's understanding of the world is always shot through with the way that they understand (and in some sense, exist) through language.

Philosopher Brice Wachterhauser (2002) outlines the freedom as well as the limits on freedom circumscribed by this view of understanding.

> History and language function as conditions of our knowledge that outstrip our ability to identify and justify *fully* [emphasis added] our dependence on them. They are known partially…. There is a certain ineluctable inarticulacy and inescapable opacity in all our knowing. (pp. 57-58)

However, even though this statement is about limitation, Gadamer's is not a pessimistic view of the human epistemological condition. Experienced people would not become depressed by the knowledge of this limitation. Instead, because of their experiences and knowledge drawn from them, they would become more open to learning from new experience. Such people would be "radically undogmatic." For Gadamer, people have a dialogue with experience, and the most fulfilling dialogue opens one up to more experience and more truth: "The dialectic of experience has its proper fulfillment not in definitive knowledge but in the openness to experience that is made possible by experience itself" (2006, p. 350). Gadamer sees proper being-in-the-world as awareness that learning from the past makes the future an area for potential (but not unlimited) growth.

This view has serious ramifications for the idea of knowledge. Gadamer believes that since Aristotle, Western philosophy's search for knowledge has been mistakenly fixated on the demonstrative proposition, or the statement of fact (1964/1976, p. 120). In the orthodox view, in order to have understanding, one is required to judge the truth or falsity of a demonstrative proposition. So a reader coming across the demonstrative proposition "The wall is green" would be said to have understanding if he or she could judge whether the statement was true. What Gadamer critiques about this is the idea that statements can have a pure and objective essential meaning—that truth is somehow *in* the statement. For Gadamer, understanding the statement means more than these things. Statements are always proposed in language, and language does not work this way.

Instead of essentially consisting of stand-alone propositions, language is instead essentially dialogical. Therefore, for Gadamer, understanding the statement, "The wall is green" would mean being able to imagine a question that this statement answers (such as simply, "What

color is the wall?"). Every statement implies a question that it is answering. Thus Gadamer argues, "No assertion is possible that cannot be understood as an answer to a question, and assertions can only be understood in this way" (1966/1976b, p. 11). Even if propositions can exist in isolation from a motivating question, *understanding* propositions means engaging with them in this manner. Gadamer explains this point again in a different way:

> Nothing that is said has its truth simply in itself, but refers instead backward and forward to what is unsaid. Every assertion is motivated, that is, one can sensibly ask of everything that is said, "Why do you say that?" And only when what is not said is understood along with what is said is an assertion understandable. (1966/1976a, p.67)

Humans understand propositions when they grasp the statement in context with a question that it can answer.

This point demonstrates a direction to interpretation, although not a prescriptive model. Understanding (through interpreting) becomes finding an answer to usually unstated (yet ever-present) questions. As Bleicher (1993) summarizes Gadamer,

> The central task of the interpreter is to find the question to which a text presents the answer; to understand a text is to understand the question. At the same time, a text only becomes an object of interpretation by presenting the interpreter with a question. (p. 114)

This point brings Gadamer back to his original goal of describing a methodology for the social sciences. The goal of social science research is to engage and understand human phenomena, which always have their fulfillment in language. Therefore, the model of demonstrative propositions (isolated facts) often employed in scientific inquiry is inappropriate for social science research. In applying Gadamer's model to the Two Cultures phenomenon, it becomes

evident that imagining the unstated questions answered by academic fields' claims is a way to understanding the issue.

2.3.5 Gadamer on Dialogue and Conversation

As explained above, Gadamer sees understanding as dialogical: A person who wants to understand a statement must imagine what stands behind what is said, seeing it as an answer to a question. (2006, p. 363). This view has ramifications not only for understanding, but also for dialogue and conversation. It actually provides a description of good dialogue or conversation. However, it does not provide a recipe or method for achieving it, as there is always something that occurs outside of the goals of each speaker in a true conversation. For Gadamer, true conversation is something that is not forced by one side or the other. He likens it to a game in the sense that participants in a game enter into something with its own logic that includes them but extends beyond them and will develop in an indeterminate way. In describing it as play, he says, "Play fulfills its purpose only if the player loses himself in play" (2006, p. 103). True conversation goes beyond the wills of the speakers. His description is worth quoting at length.

> We say that we "conduct" a conversation, but the more genuine a conversation is, the less its conduct lies within the will of either partner. Thus a genuine conversation is never the one that we wanted to conduct. Rather, it is generally more correct to say that we fall into conversation…. No one knows in advance what will "come out" of a conversation…. A conversation has a spirit of its own, and … the language in which it is conducted bears its own truth within it—i.e., that it allows something to "emerge" which henceforth exists. (2006, p. 385)

Thus in a true conversation, new understanding is created that goes beyond its participants. This would be an example of the kind of humanistic experience (and humanistic truth) denoted by the German word *Erfahrung*.

At this point it is helpful to introduce Gadamer's famous concept of the "fusion of horizons" (2006, p. 305) in order to clarify the goal of conversation. For Gadamer, the mental horizon is the range of thoughts "that includes everything that can be seen from a particular vantage point"; a person with a broad horizon is not limited by his or her familiar ideas and beliefs and is aware that there are other ideas and beliefs in the world (p. 301). Fusion of horizons is a goal that is never achieved, but it is a goal of every good conversation (Lawn, 2006, p. 66). Gadamer uses the concept to demonstrate both how a person comes to understand the past, and he also uses it to describe to people can come to understand each other. In coming into contact with another person, both people will have their own present perspectives (horizons), and the goal is to connect them.

For Gadamer, a true conversation is not the kind in which newly introduced people get to know one another: When one learns facts about new people or learns where they are coming from and what their horizon entails, one is just encapsulating their horizons, locating their ideas without having to agree with them. "By factoring the other person's standpoint into what [he or she] is claiming to say, we are making our own standpoint safely unattainable" (2006, p. 302). In other words, this kind of conversation—not true conversation—is protective and isolating. People do not make themselves available to be changed by this kind of conversation, and they do not look to fuse their horizon with another's. In a true conversation, the horizons will be in tension with one another as they are on the way to fusion. It is the role of hermeneutics to activate that tension and bring out truth. "The hermeneutic task consists in not covering up this

tension by attempting a naïve assimilation of the two but in consciously bringing it out" (2006, p. 305). In every true conversation,

> Each person opens himself to the other, truly accepts his point of view as valid and transposes himself into the other to such an extent that he understands not the particular individual but what he says…. Thus we do not relate the other person's opinion to him but to our own opinions and views. (2006, p. 387)

In true conversation, one accepts the other point of view as *valid*, not necessarily as factually true. In addition, one does not understand *people*; one understands their speech. Understanding that speech means relating it to one's own opinions and views, relating it to unasked yet ever-present questions.

Gadamer's model also has ramifications for audience participation in presentations, which applies to the audience participation I observed at Brackenridge. These insights provide a valuable hermeneutical tool for understanding more about how some questions close down dialogue. Asking questions requires a certain skill for Gadamer: "A person skilled in the 'art' of questioning is a person who can prevent questions from being suppressed by the dominant opinion…. It is not the art of arguing … but the art of thinking" (2006, p. 361). Skilled questioning allows the presentation of questions that the speaker might not want to address or that the audience might not want to hear. However, what indicates skill for Gadamer is when the question is not used to grandstand or make a point; instead, the questioner is genuinely open to the possibility of being changed by the answer. Statements can only be understood as the answer to a question; dressing up a statement to make it look like a question will not change this logic. So a question that is really a statement in disguise also can only be understood as the answer to a question. If Gadamer is right, this explains why grandstanding questions shut down dialogue.

They short-circuit the interpretive process by which dialogue can take place. Instead of playing the proper side of the conversation game, the questioner plays both sides and provides both question and answer together.

2.4 HERMENEUTIC AND PHENOMENELOGICAL RESEARCH METHODOLOGY

Because hermeneutics is a widely ranging field encompassing very different concerns, there is no such thing as a hermeneutic methodology. However, methods can and do have hermeneutic emphases. Hermeneutic phenomenology is the best description for the methodology of this study.

A hermeneutic approach in social science research does not rely on traditional scientific conceptions and demonstrative propositions. Packer and Addison (1989) are theorists on the subject as well as authors of hermeneutic psychological studies. They differentiate what they call rationalist or empiricist approaches from the hermeneutic approaches. In their simplified yet useful conception, the researcher in an empiricist inquiry tries to take on an objective, value-neutral stance, justifying his or her explanations by comparing them with a supposed correspondence with reality. In what they describe as a rationalist inquiry, the researcher tries to be detached and abstracted from context and justifies the study by comparing the results with the intuitions of competent (rational) persons. A hermeneutic inquiry, then, consists of a relationship to the researched that consists of becoming familiar with practices and participating in a shared culture, and the inquirer looks for justification by considering whether the emerging interpretation uncovers or constructs an answer to its motivating concern (p. 16). Hermeneutics abandons “empiricism’s realism and rationalism’s inclination to abstraction” (p. 19), focusing

instead on studying phenomena in their interpretive context. If this study were an empiricist inquiry, I would be aiming to be objective and describe reality; if it were a rationalist inquiry I would separate my context and try to obtain truth that is outside of my subjectivity. Since this study is hermeneutic, I became familiar with my study subjects through participating in the Brackenridge Fellowship and justify my study by seeing if it addresses my research questions.

As Packer explains thoroughly elsewhere, the hermeneutic approach tries to study and understand its subject's semantic organization rather than through trying to find a logical or causal organization to it. Human action alone is complicated and ambiguous; understanding the semantic organization of action is even more so. There are several reasons why it is complicated. First, meaning is a human phenomenon, so there is no objective meaning to be had; it is all generated between people. Second, any observer will not have direct access to the meaning of the acts taking place because the observer will not be fully in the situation. Third, the participants do not have unproblematic access to meaning either; there may be meanings present that they are not aware of. However, the hermeneutic paradigm takes as its starting point the belief that, despite ambiguities, any observer has a preliminary practical understanding of what the people studied are "up to" (1985, p. 1081). This is the way to get into an understanding of the phenomenon that simulates the hermeneutic circle: There is no starting point, but the researcher's preliminary understanding provides a tentative way in.

A hermeneutic perspective, then, tries to operate in awareness of the social and communal issues inherent in the process of making meaning from human action. Hermeneutics makes its most significant impact in demonstrating the communal way that the human world is created. As Smith (1991) expresses, hermeneutics has this social phenomenon at its heart. Hermeneutics shows

> the way in which the meaning of anything is always arrived at referentially and relationally rather than (for want of a better word) absolutely. The final authority of concepts, constructs, or categories does not reside in the concepts themselves but within the dialogically arrived at agreement of people to consent to them. (pp. 197-98)

Meaning is not necessarily a conscious or controllable phenomenon; engagement with this phenomenon takes this into account from the beginning.

Regardless of the social nature of meaning, meaning is still a human phenomenon that can be described as having something like an essence. There is no pure center of meaning that can be isolated from the humans creating actions and interpreting them; the meaning is created between them. It is in this place that hermeneutics can meet phenomenology, even though the two have an uneasy relationship.

Max van Manen (1997) lays out the questions that are asked about a phenomenon in a phenomenological study (X):

1. What are aspects of X?
2. How does X manifest itself?
3. What does X do? How does X do what it does?
4. What is the significance of X? (p. 169)

Luckily for hermeneutics, these questions do not have to rely on a realist worldview or epistemology to be activated. All of these questions can also be applied to interpretations of texts and actions without relying on any essentialist notion of those texts or actions. As explained above, the *meanings* of those texts and actions can be the subject of analysis. However, some internal tensions must be overcome before hermeneutic phenomenology can be viable.

Paul Ricoeur (1991) is probably the best-known theoretical hermeneutic phenomenologist. He describes how the two fields share an uneasy history:

> Hermeneutics … has still not finished "having it out with" Husserlian phenomenology; hermeneutics comes out of the latter, in the double sense of this expression: phenomenology is the place where hermeneutics originates; phenomenology is also the place it has left behind. (p. xiii)

In other words, hermeneutics had its start in the human phenomenon of reading and understanding; the fields merged for a while in the work of Heidegger, but even though phenomenology proper had scientific aspirations, hermeneutics never did.

Max van Manen (1997) further elucidates the difficult relationship between these two terms, pointing out how some strict phenomenologists see hermeneutics as a weakening of the Husserlian project of discovering the essences of human phenomena. Strict followers of Husserl would claim that phenomenological research should be purely descriptive and that hermeneutics is not a part of description. They would say that

> phenomenological description is fully achieved "solely" through a direct grasping (intuiting) of the essential structure of the phenomena as they appear in consciousness. From such a point of view, the notion of hermeneutics or interpretation already implies the acknowledgement of a distortion, of an incomplete intuiting. (pp. 25-26)

However, hermeneuticists would argue that Husserl's phenomenology is not informed by the linguistic turn and not operating in awareness of the way that language constitutes the world.

Through acknowledging that everything is given its presence through language, which is always already interpreted, van Manen is able to explain a way that the concepts of hermeneutics and phenomenology are able to co-exist more comfortably. He explains that hermeneutic

phenomenology tries to attend to both of its terms. It is an *interpretive* (hermeneutic) methodology because it operates under the assumption that there are no such things as uninterpreted phenomena. In addition, it is a *descriptive* (phenomenological) methodology because concerns itself with how things appear, and it aims to let phenomena speak for themselves. He explains that the implied contradiction between these focuses can be resolved with the correct perspective,

> if one acknowledges that the (phenomenological) "facts" of lived experience are always already meaningfully (hermeneutically) experienced. Moreover, even the "facts" of lived experience need to be captured in language (the human science text) and this is inevitably an interpretive process. (1997, pp. 180-181)

An answer, then, lies in adding the linguistic observations of Gadamerian hermeneutics to the foundational search for phenomena at the base of phenomenology. For those who fear that hermeneutic phenomenology is subjective, Gadamer (2006) explains that even though human verbal experience of the world may be the fundamental way that one recognize and address the world, it does not mean that language *constructs* the world or that human phenomena are merely verbal creations. Instead, the object of knowledge and statements is "always already enclosed within the world horizon of language" (p. 447). Gadamer's view is that language interpenetrates human beings and the world, and human phenomena get their meaning through it.

Several studies adopt the methodology of hermeneutic phenomenology and have authors who provide helpful explanations of their work. They show more clearly how the interpretive goals of hermeneutics and the essentialist goals of phenomenology can work together. For example, in his grounded study, Addison (1989) tries to get at the essential meanings of the

phenomenon of physician socialization. Addressing the tension between the interpretive and essentialist aspects of his study, he explains that he approaches his research

> as if events or social acts are not seen as things-in-themselves; meanings of events are not fixed or given in pre-established categories; meaning or significance emerges and changes over time. At the same time, I believe and operate as if this interpretive activity is not completely free: meaning is always in a particular context and based upon a background of shared cultural practices; meaning is not a fundamentally unique, privatized property of individuals nor is it independent from the practical situations of social interaction…. Acknowledging this connects me with the account I am building. (p. 52)

Addison helpfully explains how the researcher is located *within* the boundaries of the study, recognizing that he is part of the meaning being generated. By recognizing his part in the project, he lays out ahead of time the way that he is connected to the meanings that are generated.

Additionally, Misgeld and Jardine (1989) utilize a more critical hermeneutic phenomenology to critique the way that the contemporary Canadian economic system places burdens on teachers and students. Instead of focusing education on the transmission of technical skills, they advocate a more hermeneutic educational experience. Their methodological approach consistently mirrors their outlook and goals.

> Hermeneutic research begins at … the moment of the belonging together of researcher and researched. It is not oriented toward producing estrangement, but toward remedying it, calling up possibilities of conversation, of mutual understanding, of dialogue. It has to do, not with the anonymous possibilities of information, but with questions of how to live one's life in interplay with others. (p. 272)

In addition to pointing out the interdependence of the researcher and researched, Misgeld and Jardine also helpfully enact that which they hope to study.

Hermeneutic phenomenology is a product of the social sciences and the humanities that attempts to grapple with the linguistic turn and yet still make useful statements (using language) about the human world. The weakness of hermeneutics has always been that when it is descriptive, it can seem trivial ("everyone interprets"), and when it is prescriptive, it immediately inspires confrontation ("well, not *everyone* reads that way"). Indeed, hermeneutics can seem solipsistic when compared with the objective goals of the natural sciences and the original scientific goals of phenomenology. Phenomenology, on the other hand, can be challenged on how possible it really is to bracket all prejudices. When both terms are put together, they can be seen to strengthen each other. Hermeneutics can show how prejudice can be acceptable and useful in phenomenology, and phenomenology can bring a foundation (human experience) to a hermeneutics that might seem tied to nothing real. In the blending these fields, substantial and relevant research in the social sciences can be conducted. Hermeneutics can best be viewed in the context of the Western humanities and German *Bildung*: as a human activity, whose justification is generated out of its history and good-faith attempts at as full a self-awareness as is possible in the human experience.

2.5 THIS STUDY

2.5.1 Objective, Aims, Background, and Significance

My study utilizes the methodology of hermeneutic phenomenology to investigate the Two Cultures phenomenon in the undergraduate researchers in the Brackenridge Fellowship, with the goal of evaluating implications for contemporary higher education. The questions to be answered are hermeneutic and phenomenological:

1. What are the conditions under which a so-called "Two-Cultures" event takes place in which interpretation of meaning becomes a challenge for some students?

and

2. What is the meaning, structure, and essence of the lived experience of this "Two-Cultures" phenomenon for these students?

These questions are investigated by utilizing several sub-questions:

- *What unspoken questions do the students seem to be attempting to answer in the Brackenridge Undergraduate Research Fellowship?*
- *How does tradition seem to be operating in these interpretations? Do the subjects seem to be aware of it? In what way are norms advocated that overlook the importance of tradition?*
- *How are prejudices operating? How do participants see them operating? How do participants overlook their operation?*
- *How is authority conceived of by these participants? How do different academic traditions operate under the influence of these conceptions?*

- *How do these participants conceive of knowledge? How do different academic traditions operate under the influence of these conceptions?*

My study builds on the issues discussed formally in C. P. Snow's essay—the interpretive separation between academic disciplines—as a hermeneutic event. The study contributes to the discussion of Two Cultures issues in academia and Western culture. In addressing the issue of interpretation among disciplines, I also provide implications for the design and implementation of liberal education programs in higher education. When I began the study, I anticipated that Two Cultures conflict would provide teachable moments, and that employing the theoretical perspective of hermeneutics can provide bridges for students and scholars who find themselves lacking the interpretive framework necessary for developing understanding.

There are conceptual and practical implications of this study. Conceptually, Gadamerian understanding (imagining a question that can be answered by the topic of study) provides an unorthodox model for conceiving of knowledge and being in the world that provides justification for qualitative modes of understanding. Gadamer's concept also leads to important ramifications for the concept of academic (and human) identity.

There are clear practical implications from this study for the Brackenridge Fellowship, as well as for liberal education and academia more generally. For the Brackenridge Fellowship, one recommendation is to directly address the democracy of disciplines implied by the structure and funding of the program. Positions on this issue could provide an engaging discussion or debate and a teachable moment for the Brackenridge community.

For liberal education, colleges and universities should consider general education programming beyond the traditional requisite of requiring several courses in different subject areas. Without an examination of how the structure of general education implies value judgments

of academic disciplines and how these fields have ideas that are perceived as conflicting with each other, an important teachable moment is missed. Gadamerian hermeneutics helpfully provides guidance as to how a truly educational conversation can be realized with these issues, through examining the way that traditions are enacted in academic disciplines. In academia, if institutions are serious about encouraging undergraduates to engage with liberal education instead of fulfill menu choices, they should set an example by encouraging interdisciplinary work and considering it in tenure and promotion decisions.

For the future, another population to examine the Two Cultures conflict in is academic faculty. Occasionally Brackenridge Fellows doing interdisciplinary projects have research mentors from different academic fields, and conversations in these committees could provide insight into the issue. In addition, the project of a workshop, seminar, or course that examines intellectual history, tradition, and community would do much to educate students. Research is required to explore what benefits it could provide and what difficulties would ensue in trying to implement it at different points in a student's education.

2.5.2 Methodology

Hermeneutic phenomenology is a rich methodology that addresses perceptions and interpretations through attempting to uncover some of the traditions and communal issues underlying interpretations. Understanding is sought, not as an access to reality, but as an engagement with unasked yet ever-present questions. Hermeneutic phenomenology seeks to illuminate the phenomenon of understanding and misunderstanding, while making clear the researcher's position as an inseparable part of the study. It is unlike many other modes of research, which might employ specific criteria to address a central motivating question. With

some research, results can be severed from the means by which the results are obtained. With hermeneutic phenomenology, however, the link with the results cannot be broken without loss of reality to the results. When learning about the "results" of a study of phenomenological nature, a reader "will listen in vain for the punch-line, the latest information, or the big news" (van Manen, 1997, p. 13). Instead, the criterion that a hermeneutical study utilizes is whether the emergent interpretation constructs an answer to its motivating concern (Packer & Addison, 1989, p. 16). The goal of interpretive research is not statistically valid generalizability, so this study will not rely on statistical analysis of data.

2.5.3 Methods

This is a qualitative study utilizing interviews and focus groups. Subjects were selected purposefully, not randomly. For the one-on-one interviews, the kind of sampling employed was criterion sampling, which consists of choosing cases that meet a predetermined criterion (Patton, 2002, p. 238). I selected 9 students who seemed to demonstrate hermeneutic engagement as fellowship members. Selection was made with an eye toward maximum variation in interpretive experiences as evidenced at presentations. Variation in interpretive experience included

- the amount that different students seemed to struggle with their interpretive challenges
- differing apparent emotional states as students asked their questions (e.g. frustration, exhilaration, tenacity, confidence)
- differing standards that students refer to in attempting to interpret the presentations (e.g. speaker's intent, common knowledge, standards of specific disciplinary fields)
- apparent tolerance for ambiguity

The interviews took the form of an approximately 1-hour semi-structured interview with me. I utilized semi-structured interviews with the subjects in their one-on-one interviews (see the Appendix for the Semi-Structured Student Interview Script). Semi-structured interviews start with a set of possible questions. The interviewer treats the questions as a set of prompts that can be used to probe the topic under study from the direction that seems most relevant. Unlike in a quantitative study, the goal in interpretive research is not to make sure every student is asked the same question so answers can be compared for statistical analysis to project generalizable results. Instead, the goal is to deepen the interviewer's understanding of the phenomenon, so flexibility is required. Examining a concept as human as meaning requires *human* engagement in conversation, not adherence to a rigid method. As Gadamer argues, adherence to a method can actually occlude truth rather than allow it to unfold (Lawn, 2006, p. 61). In a semi-structured interview, it is not unusual that different questions may be asked of different people if it seems like a new direction may be more fruitful for advancing the interviewer's understanding. However, in the current study, most of the same questions tended to be used for every student.

In the one-on-one interviews, my goal in the beginning questions was to ease the students into the interview and record basic information about majors and research projects. I also asked the interviewees if they felt that they were good at the classes in their majors. I did not expect students to say they were not; however, I thought it was important for them to confirm this fact, to establish their authority in their fields. In addition, it gave them a chance for humility (even if it was false).

The next questions concern how the students see themselves fitting or not fitting into their majors. The goal was not to get data for personality typing, but instead to get the students thinking about the idea of academic cultures. We discussed the student's research project and

faculty advisor, and students spoke enthusiastically about them, allowing them to relax further and connect their emotional engagement to their intellectual interests.

When the conversation allowed, I asked students to define or describe research in their fields, and then I asked them to expand that definition to any field. Later I did the same for the concept of interpretation. These discussions started to open the discussion up to address my research questions more fully. We also talked about any significant hermeneutic conflicts I had observed them engaging in. Finally, when appropriate, I addressed the topic of Gadamerian prejudice. Presenting prejudice in the positive sense that Gadamer sees it seemed to make the students comfortable in honestly sharing some of their beliefs and biases.

Participants in the focus group were again purposefully chosen, this time using homogeneous sampling. Homogeneous sampling consists of picking a homogeneous subgroup (Patton, 2002, p. 235), and so the focus groups consisted of six people who had participated in individual interviews and who demonstrated engagement with hermeneutic issues. The focus group was an approximately ninety-minute discussion among six students and myself. The Focus Group Discussion Topics in the Appendix shows my ideas about what topics of discussion could be covered, but generally we discussed the ideas of research and interpretation in different academic fields, comparing and contrasting how those concepts were used. Inevitably, Two Cultures arguments occurred, which provided much helpful insight into the issue.

2.5.4 Subject Recruitment

The Directors of the Brackenridge Fellowship made the names, project titles, phone numbers, and email addresses of each Fellow available to me. The Directors also introduced me to the students on the first day of the Fellowship, explaining that the students' choice to participate in

the study would have no bearing on their status as Brackenridge Fellows or as students at our university.

During my introduction, I introduced the project. The First-Day Introduction Script I followed on that day appears in the Appendix. I attended each Thursday meeting and participated in the Fellowship as a participant-observer audience member.

Both males and females were sought for the study; no racial or ethnic subgroups were specifically sought or specifically excluded from participation. All individuals being recruited to participate in this research study were able to read and comprehend English. The group of students considered for participation in the study included the 55 Fellows and one student helper. There were 45 students who awarded Brackenridge Fellowships in 2007 and approximately 10 students who were awarded University of Pittsburgh's School of Arts and Sciences Summer Undergraduate Research Awards, who are expected to be full members of the Brackenridge Fellowship. A total of nine participants (seven male, two female) were enrolled in the study out of the 55 Brackenridge Fellows. Although diversity of academic fields and of interpretive positions was sought, there was no statistical justification sought because this study does not seek generalizability.

2.5.5 Qualifications of Three Kinds: My Background, My Subjectivity, and Surprises

The word qualification denotes either credentials or limitations. Both senses of the word are appropriate to a Gadamerian study. Just as prejudices allow meaning to occur, my credentials, my subjectivity, and surprises I encountered all are integral parts of the meaning that is created for me in this study. In attempting to be aware of what I bring to the research, I do not attempt a phenomenological bracketing; however, I do try to become more aware of how my prejudices

form meanings for me. I was thrown into the world with certain advantages and abilities that allow me to conduct this study.

My credentials consist of academic and vocational experiences that have led me to think of the natural sciences, the humanities, and the social sciences as equally important, but in different ways. My studies in academic physics and teaching science have given me an appreciation for how accurate and useful models of the natural world can be. I also gained an understanding of the level of mathematical mastery and technological savvy that is required to do work in the natural sciences.

My degree in English and English teaching experience gave me a chance to work out how I think about the concepts of writing, texts, and interpretation. Coming to a moderate hermeneutic position in the field of English, where and critical and radical hermeneutics are in vogue, is a difficult process. It involves reading authors who are at best considered interesting tangents to the history of the development of current theory. However, it also gave me an understanding of how hermeneutic positions (such as Gadamerian hermeneutics) come about through cultural and historical forces.

The courses from my doctoral program at the University of Pittsburgh that helped the most were my coursework in Qualitative Research, Disciplined Inquiry, Ways of Knowing, and Survey Research. My exposure to professors with qualitative and quantitative perspectives helped me to understand better the methodological debate in the social sciences and to learn the methodology I employ here.

As well as being an advisor in the Honors College, where I get to discuss academic conflicts with students constantly, I was a participant-observer in the Brackenridge Fellowship. I asked questions when I was curious about presentations; I played softball with the students when

they gathered for fun; I ate and socialized with them when possible. I ended up creating or deepening advising relationships with many Fellows that summer, as I do each summer. Generally each summer I get to know the Fellows very well, and that was especially the case for the participants in the study.

My subjectivity is informed by these credentials and goes beyond them. As an academic advisor, I hold a neutral opinion on the value of one major over another. However, I am aware of academic prestige conflicts that influence student choices; for example, very few of my advisees choose the commonly derided communications major, even if it could be a field that might interest them.

Before I began my deeper study of hermeneutics, I desired a democracy of disciplines, equal footing for all. This goal is only partly achievable through Gadamerian hermeneutic phenomenology. I can respect disciplines within their traditions; however, viewing objectivity as a research tradition takes some of the power away from the truth claims common to the natural sciences, placing the natural sciences within the realm of tradition and history (the humanities).

I experienced several important surprises in the course of this study that also qualify this work. First, all of the study participants except one liked all of their majors. As will be explained in Chapter 4, the study participant Luther Yu expresses dislike for his English major. In our interview, we discussed his feelings about this, leading to an important discussion about what he saw as a lack of rigor in his undergraduate program. He says that in his classes, many times the discussions were about how people felt about books instead of applications of literary models. As will be seen later, this comment fits in with his larger concerns about the ambiguity of the humanities.

The ambiguity of the humanities led to another surprise for me. In a different one-on-one interview, Brackenridge Fellow Anita Iqbal was blunt about not caring to answer one of my questions—I had asked her for a definition of research in the humanities. However, I explored why she felt that way, and the interview turned into a productive experience. Again, her comments will be explained more thoroughly later, but it turned out that she liked to focus on the ambiguity permitted in the humanities and did not enjoy trying to define it in the same way that the natural sciences seemed to define their own brand of research.

One final surprise occurred after the focus group. I do not know which student suggested it, but they all decided to go out to a coffee shop together afterwards. I neither encouraged nor discouraged it. Perhaps everyone wanted to keep the discussion going, or perhaps they felt obligated to the community that they had just formed. In any case, we got to the coffee shop, ordered our drinks, and sat together. Instead of facilitating further discussion, I sat back and watched. Nothing remarkable occurred; the conversation was shallow, and the group broke up relatively quickly.

2.5.6 Consent and Confidentiality

No research procedures were conducted prior to obtaining each participant's documented consent. When asking a Fellow to participate in the study, I read the In-person Request for Participation (found in the Appendix) to him or her. I individually informed the candidate of the purpose and procedures of my study and reviewed the Consent Form with him or her (see the Appendix for a sample). Documented consent was obtained. All subjects were eighteen or older at the time of the study and were undergraduate students at the University of Pittsburgh; the youngest participant was a rising sophomore, but usually Fellows are entering their junior or

senior year. The Consent Form states the purpose and methods of the study, and that there are no risks or benefits for participation. Participants were informed verbally as well as on Consent Forms that they have the right to not participate in the study for any reason, that they can quit the study at any point, and that their non-participation would not affect their Brackenridge Fellowship or their standing with the University. No one declined to participate after being asked to do so.

All forms, notes, recordings, transcripts, and other documentation remain in my possession, stored in a locked file. In order to protect the subjects' identities, I assigned pseudonyms for the subjects and for people mentioned by the subjects. The pseudonym key is kept in a separate locked location from the other documentation. At the conclusion of the dissertation, the audiotapes taken during interviews and focus group will be destroyed. Participants were told that notes, audiotapes, and transcripts, as well as the separate identifying key, would be destroyed if the subject should decide to withdraw from study participation. Research subjects were not charged or remunerated for the time and inconvenience associated with their participation in this research study.

2.5.7 Organization and Preparation for Analysis

The interviews and focus group recordings were transcribed; some by me and some by paid transcribers at the University of Pittsburgh Center for Social and Urban Research, paid for with funding from the University Honors College. I then assigned pseudonyms to all names on the transcripts.

As Anselm Strauss (1987) argues, structural conditions mitigate against being too prescriptive about methodological rules for organization and analysis in social research. Instead

of prescribing rules, he provides guidelines and advises flexibility (pp. 7-8). However, he does recommend the methods of memoing and coding, which proved invaluable in this study. Memoing consisted of writing notes to myself during the Brackenridge presentations, interviews, focus group, and any time spent with the transcripts. These memos serving as organizational and developmental tools in each stage of the process.

Coding is another word for marking the concepts that seem present in the transcripts so that they can be organized. Strauss recommends the processes of open-coding, axial coding, and selective coding. Open-coding consists of unrestrictedly allowing provisional organizing concepts to emerge that seem to fit the data. Axial coding consists of intensely analyzing around one category at a time, and selective coding is a finer-grained process of organization, marking concepts systematically for the core category coding (Strauss, pp. 55-81). Although I did not follow the process in this prescriptive manner, I categorized concepts along several possible conceptual and thematic lines until some emerged as likely to provide answers to my motivating questions. As Coffee and Atkinson (1996) explain, the process of coding generates concepts from and with the data, forming the introductory stage of analysis (p. 26).

2.5.8 Analysis

There is no such thing as a Gadamerian method of analysis. As mentioned above, calling anything a Gadamerian method would be against what Gadamer saw his hermeneutics as attempting to accomplish. For Gadamer, reliance on a method *obscures* truth rather than evokes it (Lawn, 2006, p. 61). However, it is clear that for Gadamer, understanding is imagining the question that a statement can answer, so it is important to constantly revisit my research questions in order to develop meaningful codes and an illuminative analysis.

The main hermeneutic guiding question of this study is, "What are the conditions under which a so-called Two-Cultures event takes place in which interpretation of meaning becomes a challenge for some students?" and the phenomenological question is, "What is the meaning, structure, and essence of the lived experience of this Two-Cultures phenomenon for these students?" These questions are broken into smaller questions developed from Gadamerian philosophy:

- *What unspoken questions do the students seem to be attempting to answer in the Brackenridge Undergraduate Research Fellowship?*
- *How does tradition seem to be operating in these interpretations? Do the subjects seem to be aware of it? In what way are norms advocated that overlook the importance of tradition?*
- *How are prejudices operating? How do participants see them operating? How do participants overlook their operation?*
- *How is authority conceived of by these participants? How do different academic traditions operate under the influence of these conceptions?*
- *How do these participants conceive of knowledge? How do different academic traditions operate under the influence of these conceptions?*

Two different possible strategies emerged for starting the analysis. The first option was to organize each main analysis chapter of the dissertation around a significant Two-Cultures *issue*; the second was to group the analysis chapters as *disciplinary categories*. There were advantages and disadvantages to both organizational/analytic strategies.

The advantage to the former strategy would have been the ability to keep issues that concern a relationship between academic disciplines in one place and avoid splitting them across

chapters. For example, take the issue of prestige. The prestige of the natural sciences is seen as related to the prestige of the humanities. There is the perception that high pay in the natural sciences causes some to choose it even if they do not like it, along with a perception that people who study the humanities must really love the subject because of likely low future pay. Comments on this subject usually were structured as a comparison between the prestige of a student's academic discipline and the prestige of the other discipline. As explained earlier, one of the central points of phenomenology is that phenomena cannot be broken into subject and object without losing something of the phenomenon. Organizing chapters along the lines of conceptual issues would keep such issues intact.

However, the disadvantage of organizing chapters in this manner would be that it would be more difficult to highlight vital connections among conceptual issues *within* disciplines. For a study concerning academic cultures, separating the pieces of an academic culture could cover over some critical issues. To continue with the former example, the prestige of a discipline is connected not just to economics and enjoyment, but also to other issues *within* the discipline such as perceptions of utility, ideas about how to interpret, and perceptions of what epistemology is in play. So building the primary chapter divisions around conceptual issues would make it difficult to point out these important connections between issues within disciplines.

The plan I adopted was to *first* group the comments around academic divisions (natural sciences, humanities, and social sciences), and then divide the chapters themselves along the lines of issues. This strategy has its own advantages and disadvantages. As mentioned above, this chapter structure allows the easy interrelation of intra-disciplinary issues. However, there are a few times when a phenomenon with several aspects to it must be split across chapters; the reader is alerted when another side to a phenomenon appears in a different chapter. Within chapters, I

started with quotations from people who seemed to generally consider themselves within that disciplinary division, to get a sense of points of view that might be voiced in the discipline. Generally, I next worked with quotations from people who were critical of that disciplinary division. Finally, if it illuminated an issue further to have comments that were both positive and negative together, I used quotations from the focus group. In some cases, the focus group demonstrates a way of synthesizing different views; in others, it merely re-creates a Two Cultures conflict.

Within chapters, the phenomena are divided up according to the four themes: two of what I call "Conceptual Issues" (epistemological, theoretical-perspectival, methodological, and interpretive issues), and two "Production Issues" (academic labor/utility, and prestige surrounding a discipline). In order to be fair to the Gadamerian perspective, some interrogation of these categories is necessary.

Conceptual issues include four ideas from Crotty's model, plus the idea of interpretation. From Crotty's model I take ontology (theory of the nature of existence and reality), epistemology (theory of the nature of knowledge), theoretical perspective (philosophical stance informing the methodology), methodology (strategy, plan, process, or design behind the methods), and interpretation. Comments concerning the first three issues seemed to group well together somewhat naturally, and interpretation seemed to separate out into its own category.

Any Gadamerian study takes into account interpretation all of the time. However, in taking comments on their own terms, I saw that most students see interpretation (especially, but not exclusively in the natural sciences) as an issue separate from the epistemological and presentational issues of natural science. In allowing "Interpretation" to have its own section, the danger is that of being in bad faith with the Gadamerian perspective. However, issues of

interpretation are examined in every section, and the "Interpretation" section will be doubly so. The "Interpretation" sections of the analysis chapters are interpretations of the phenomenon of interpretation.

In addition, interpretation is an ambivalent word in this study. Students use the word interpretation to refer to both the work of the researcher during a project and to the process of explaining it to others. However, in both cases, there are two primary ways that the word is used by students, and the definitions match up with Gallagher's (1992) categories of hermeneutics. On the one hand, conservative and critical schools of hermeneutics view interpretation as something that *can* be done correctly, so an interpretation can be true or false: the "the right (or wrong) interpretation." On the other hand, moderate and radical hermeneutics view interpretation as expressive and creative, so interpretations cannot really be true or false. This is the sense referred to when someone uses a phrase like "just an interpretation." To summarize these two views, interpretations can be seen as presenting (or being mistaken about) truth, or they can be seen as a narrative tool, neither true nor false.

The topics that do not fall under the heading of Conceptual Issues are comments referring to one of several issues: Crotty's category of methods (techniques or procedures that are used), issues of labor (the kind of work done) and utility (how it is seen as useful), and the special mystique of an academic field. All of these issues are intertwined; however, they do not group themselves easily under any particular way of demarcating them. The concept of "production," in two of its definitions, provides a way to hold these concepts together. Production in the sense of the products of science is the first section, and production in the theatrical sense is the second.

In addition, in organizing the order of the analysis chapters, there is no obvious discipline to begin with. In a study such as this, there is no "beginning" discipline and no "ending" one.

However, they must be discussed sequentially. It would be best to think of the analysis chapters in a hermeneutic loop. The natural sciences, humanities, and social sciences are not points on a line; instead, it is best to think of the analysis chapters as a pre-existing loop that the reader enters at the point of the natural sciences.

Finally, every comment about the natural sciences is in a larger context with comments about the humanities and social sciences; the same is true for the other disciplinary divisions. Therefore, the diagram of analysis chapter organization (Figure 1) also shows reverse arrows at each stage as well.

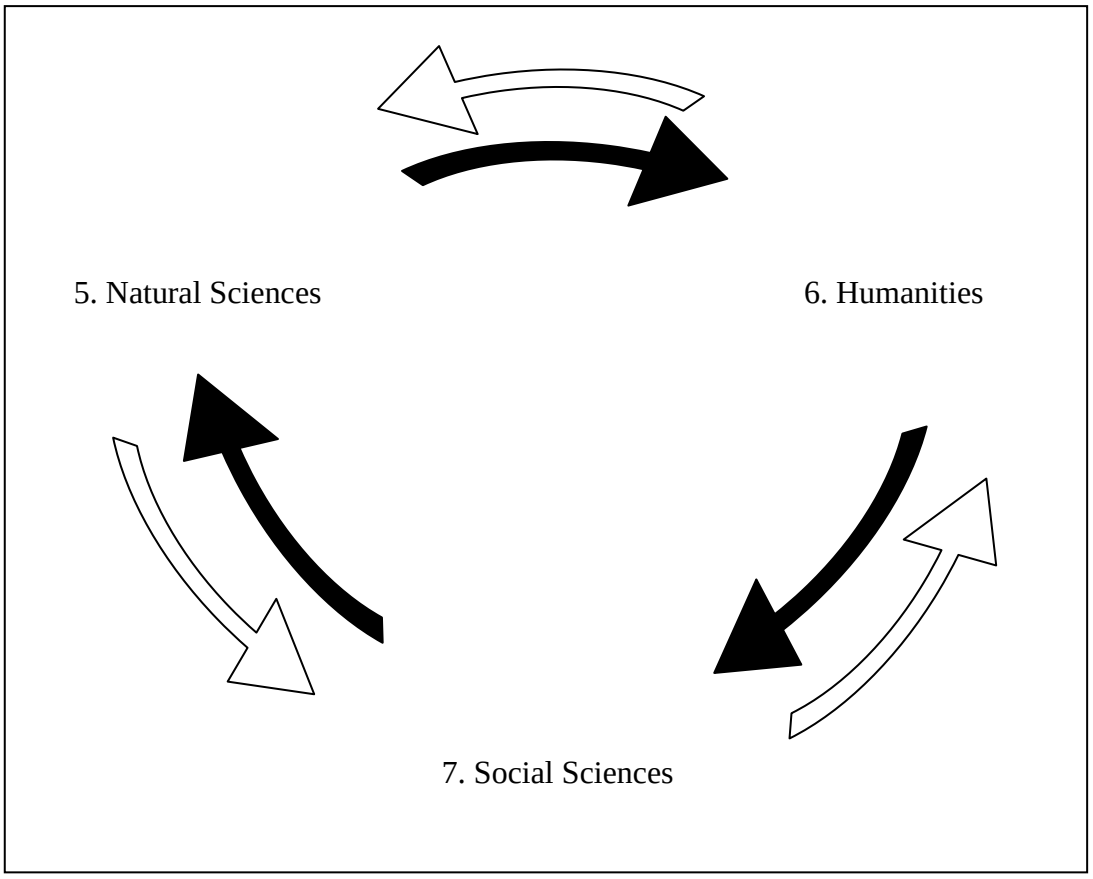

Figure 1. Organization of Analysis Chapters

Why begin with the natural sciences? In “The Universality of the Hermeneutical Problem,” Gadamer explains how the human natural view of the world in the modern age is related to “the unassailable and anonymous authority that confronts us in the pronouncements of science” (1966/1976b, p. 3). People are thrown into a world in which science has a pre-established authority. Gadamer sees examining that authority first before moving on to other areas to be a sensible path, and this study takes the same route. After the natural sciences, this study moves to the humanities in order to examine the older tradition, which has been affected by modern views of subjectivity and objectivity. Finally, the social sciences are examined in the light of these two traditions. The circle begins again, and the insights of the social sciences into the communal nature of academic work are applied to the natural sciences and humanities.

In addition, the fact that I began with the natural sciences in my academic career, went to the humanities, and through my study of education have been most exposed to the social sciences, cannot be avoided. In this personal journey, I followed the path Gadamer lays out in developing his perspective, which is probably one of the reasons why I am so attracted to his ideas. This forms part of the perspectives that I bring to the study. My history and attraction to this model is an inseparable part of the study. It is through these pre-understandings that I came to perceive and consider the issue of Two Culture conflicts in the Brackenridge Fellowship.

3.0 THE TWO CULTURES AND BRACKENRIDGE

Any attempt to offer a definitive account of the Two Cultures issue becomes immediately enmeshed with the Two Cultures issue itself. The phenomenon ostensibly concerns academics in the sciences and humanities not understanding each other; therefore, what seems necessary is an analysis that foregoes the biases and downfalls of each disciplinary division. What, then, is the best way to examine an academic phenomenon while not standing on any academic ground? A search for scientific certainty about the nature of the Two Cultures phenomenon runs into the philosophical problem that it is a phenomenon of human experience, not something that can be observed objectively. A historical approach could be criticized for not being philosophical enough, and a philosophical approach could be criticized for not being scientific.

The paradox is that from academia there seems to be no unimplicated discipline from which to examine academia. In this chapter, it will be seen that anecdotal work such as Snow's comes in for criticism from scientists *and* from humanists for employing overgeneralizations and stereotypes. Humanistic and social-scientific work can be interpreted angrily by scientists as "nonscientific," and work that tries to operate in a scientific model can be interpreted as epistemologically naïve. At all levels, the irony is that the participants in the debate end up enacting the very thing they are trying to describe. However, it is important to closely examine the ways that the issue has been addressed within these disciplines, not only to see some Two

Cultures arguments in action but also to see what helpful observations can be used from these studies.

Therefore, after exploring how Snow's discussion of the Two Cultures fits into the larger context of the history of liberal education, this chapter examines ways the natural sciences have been studied by the humanities and social sciences, broader social-science perspectives that take into account all of academia, and the concept of interpretive communities. This examination not only shows the successes and limitations of different perspectives on the issue, but it also provides more examples of the Two Cultures phenomenon being enacted.

3.1 C. P. SNOW, THE TWO CULTURES, AND LIBERAL EDUCATION

C. P. Snow (1905-1980) was a British scientist and novelist. Early in his career, he and his research group thought they had developed a method to artificially produce Vitamin A, which they wrote up and published. When it was discovered that the process did not work, they had to recant the paper in embarrassment, and Snow largely quit doing scientific work. He also started publishing novels at this time. When World War Two broke out, Snow went to work for the British government in administering national science work. In 1959, he delivered the Rede Lecture at Cambridge that gave the Two Cultures phenomenon its name.

Snow's work can be better understood as an event in conversation with the broader historical subject of the liberal arts. Snow was certainly not the first to recognize a fundamental division in knowledge in the western world. The seven liberal arts have their roots in classical antiquity; they consist of the trivium (grammar, rhetoric, and logic) and the quadrivium (arithmetic, astronomy, geometry, and music). Broadly speaking, today this division translates

awkwardly to the humanities and the natural sciences, respectively. The idea of the seven liberal arts continued largely unchanged through the universities of the middle ages. However, studying at a university usually meant studying the liberal arts in preparation for further study to become a priest, lawyer, or doctor. In the nineteenth century, John Henry (Cardinal) Newman, the first rector of what is now University College Dublin, saw the university as solidly based in the liberal arts. His lectures from the time of his rectorship, now collected in *The Idea of a University* (1996), explain his view as the university as a place for teaching and learning, not necessarily for research or the production of useful knowledge. Liberal education for Newman was about preparing a student for all of life, not for a specific career, and the liberal arts provided the best all-around preparation he could imagine. The different foci of the different liberal arts provided a well-rounded education, in his view.

It was not until the nineteenth century that universities started experimenting with the idea of making natural and social sciences a subject for study. At around this time, theorists like Wilhelm Dilthey (1833-1911) attempted to bring a deeper analysis to bear to help understand the division between the humanities and the natural sciences. The question was the following: Besides the fact that different fields had different topics of study, was there something else, something more significant that was different between the humanities and the natural sciences? Dilthey, building on the work of Max Weber (1864-1920) in the social sciences, advanced a theory that claimed these areas utilized different epistemologies. He argued that the humanities (and, for him, the social sciences as well) sought to *understand* their topics of study in terms of a relationship between the part and the whole. The natural sciences, he claimed, were different because they sought to *explain* phenomena in terms of cause and effect, or the general and the particular. These different approaches are usually denoted by the German words *Verstehen* (to

understand) and *Erklären* (to explain), respectively (Crotty, 2003, pp. 67-68). An example is provided by this study. Using Dilthey's terminology, this study is an example of seeking to *understand* (*Verstehen*) in terms of a relationship between parts and the whole instead of the more traditionally scientific goal of seeking to *explain* (*Erklären*) phenomena in terms of cause and effect or the general and the particular.

Snow's historical context in the scientific and literary fields is important for understanding his argument. In the natural sciences, he is living in the age of Einstein and the atom bomb. In literature he is writing after the ascendancy of Existentialist, Naturalist, early Absurdist, and High Modernist authors, who largely saw the human condition as, respectively, angst-ridden, tragic, absurd, and/or fallen. The natural sciences were experiencing a new golden age of atomic power and weapons. Literature had developed modes to help explain and express angst and fear, but the major authors of the period are not considered today to be uplifting.

In explaining his thesis that western academic culture is becoming divided into two major groups, Snow makes four generalizations: 1) scientists are generally optimistic and humanists pessimistic about the human condition, 2) these groups overgeneralize and stereotype each others' perspectives, 3) the public unfairly believes that the humanities represent the only real intellectual culture, leaving the natural sciences out of that club, and 4) both groups lack comprehension of each other's work (1998).

Snow (1998) backs into his discussion of the cultures' perspectives on the human condition by starting with the other culture's stereotype and then correcting or elaborating on it. He argues that humanists see scientists as "shallowly optimistic, unaware of man's condition" (p. 5). (Thinking phenomenologically, one can argue that this is a comment about both the humanities and the natural sciences.) An example of this today would be critiques in the

postmodern era of what has been called the "metanarrative of progress"—an uncritical acceptance of the idea that humankind is making progress through the use of reason and science (Lyotard, 1984). Snow says that humanists' anti-scientist argument "depends upon a confusion between the individual and the social experience, between the individual condition of man and his social condition" (p. 6). In a correction to the humanists' stereotype of scientists, he argues that scientists may indeed agree that the individual condition is tragic, but they do not think the social condition has to be. Snow generalizes that scientists

> are inclined to be impatient to see if something can be done: and inclined to think that it can be done, until it's proved otherwise. That is their real optimism, and it's an optimism that the rest of us badly need. (p. 7)

In other words, for scientists, problems have solutions until proven otherwise. In this quotation Snow is, perhaps unintentionally, being normative about the idea of optimistic scientific progress.

Snow (1998) then turns his attention to scientists. Scientists, he says, believe that the humanists "are totally lacking in foresight, peculiarly unconcerned with their brother men, in a deep sense anti-intellectual, anxious to restrict both art and thought to the existential moment" (p.5). Snow seems to agree with the scientists, saying that those in the humanities

> like to pretend that the traditional culture [of literature and philosophy] is the whole of "culture," as though the natural order didn't exist…. As though the scientific edifice of the physical world was not, in its intellectual depth, complexity, and articulation, the most beautiful and wonderful collective work of the mind of man. (p. 14)

Snow's appreciation for the work of scientists is palpable through his work, and it is difficult to argue that he takes a balanced view of the situation. His frustration comes out in a famous example:

> A good many times I have been present at gatherings of people who, by the standards of the traditional culture, are thought highly educated and who have with considerable gusto been expressing their incredulity at the illiteracy of scientists. Once or twice I have been provoked and have asked the company how many of them could describe the Second Law of Thermodynamics, the law of entropy. The response was cold: it was also negative. Yet I was asking something which is about the scientific equivalent of: *Have you read a work of Shakespeare's?* (1998, p. 15, emphasis original)

Thus, contemporary culture not only suffers from a division between cultures, but it also suffers by not realizing that the natural sciences should be on the same footing as the humanities.

Snow (1998) describes a "pole" of social attitudes residing within the community of the humanities and overflowing into general society:

> The pole of total incomprehension of science [within the humanities] radiates its influence on all the rest [of society]. That total incomprehension gives, much more pervasively than we realise [sic], living in it, an unscientific flavour [sic] to the whole "traditional" culture, and that unscientific flavour is often, much more than we admit, on the point of turning anti-scientific. (p. 11)

For Snow, the Two Cultures are distant and moving farther apart. At the time he is writing, he does not see much hope for the future, and it seems to him that things are getting worse.

> Thirty years ago the cultures had long since ceased to speak to each other: but at least they managed a kind of frozen smile across the gulf. Now, the politeness has gone, and

> they just make faces. It is not only that the young scientists now feel that they are part of a culture on the rise while the other is in retreat. It is also, to be brutal, that the young scientists know that with an indifferent degree they'll get a comfortable job, while their counterparts in English or History will be lucky to earn 60 percent as much. (pp. 17-18)

The problem is not just one of academia: He thinks that the "intellectual life of the whole of western society [is] being split into two polar groups" (p. 3). This tragedy is leading to what he warns is "practical and intellectual and creative loss" (p. 11). Snow sees the solution in well-balanced educational systems. He admires the relative breadth provided by the American system of secondary education of his day, as compared to the specialized system he experienced in Great Britain (p. 18).

After the publication of *The Two Cultures,* Snow was quickly contested by both scientists and humanists who argued that his model was clumsy and oversimplified. The most prompt and vociferous condemnation of this sort came in a book by literary critic F. R. Leavis and biochemist Michael Yudkin (*The Two Cultures?,* 1963). They criticized Snow for suggesting that incommensurable entities like scientific concepts and literary works could and should be compared. Ironically, the degree of ad hominem savagery that Leavis leveled at Snow probably did more to enshrine Snow's lecture than the lecture itself. Leavis' comments like "Snow is, of course, a—no, I can't say that; he isn't: Snow thinks of himself as a novelist" (p. 31) caused many to rise to Snow's defense, if only for good manners. Prominent authors in the humanities such as Lionel Trilling, who agreed with Leavis' substantive points, criticized Leavis for his vicious tone. Trilling complains that Leavis' is "a bad tone, an impermissible tone" that "diverted attention, his own included, from the matter he sought to illuminate" (1965, pp. 130-131). However, the damage was done. Snow's formulation of the problem, even with its

generalizations, has come to stand as an important, if flawed, foundational document in the Two Cultures saga.

Some see Snow's lecture and the events surrounding it as an aberration from the normal peace and goodwill (and agreement to stay away from each other's fields) of academia. However, it may be that the Two Cultures issue is an important emblematic phenomenon that demonstrates, even better than liberal education does, what liberal education is about. Snow's crime may have been in wandering across the well-policed boundary between disciplines.

As Jerry Gaff (1983) explains, colleges and universities in the United States have attempted to provide liberal education to undergraduates since their inception (p. 2). Originally the liberal education portion of a student's education was provided by curricular requirements in the classics. As American universities in the nineteenth century adopted the German model that focuses on research, the classical curriculum came to be gradually replaced by what is today called general education, or education in courses across the academic disciplines. Despite different philosophical aims guiding general education requirements, these requirements generally take the form of distribution requirements (a certain number of courses in different divisions of study), a core curriculum (a set of courses required of everyone), and/or free electives (usually but not always individualized under agreed-upon curricular contracts) (pp. 10-11). The philosophy behind general education (or rather, behind having general education as a means to a liberal education) is that in addition to learning about a major, a student learns some substance of the different academic traditions, hopefully leading to a synthesis of knowledge or appreciation for different modes of thought (pp. 7-8). Although from the beginning of Western academia there has been a division between ways of thinking, a liberal education is intended to provide instruction on both sides of that gap.

3.2 HUMANISTIC AND SOCIAL-SCIENTIFIC INVESTIGATIONS OF SCIENCE—AND THE CONSEQUENCES

Snow's anecdotal model of the conflict begs two fundamental questions: whether the different academic views he describes constitute cultures, and what the precise nature of the Two-Cultures divide actually is. Neither question has been very well explained by further study, but explorations of academic culture issues have begun from the side of the humanities and social sciences. This seems appropriate, given that a human enterprise (academia) would be the proper subject of study for the humanities and social sciences. The umbrella term for these investigations is now loosely termed "science studies." And although examining science as a philosophically motivated, historical, and social phenomenon began sedately, it has made many scientists uncomfortable and has led to vociferous backlash in the past few decades.

The philosopher Karl Popper (1902-1994) is famous for, among other things, investigating and critiquing science as it was traditionally understood. In *The Logic of Scientific Discovery* (1934/2002), and later works like *Conjectures and Refutations* (1963/2002) and *The Myth of the Framework* (1994) he rejects classical empiricism (briefly, the idea that things can be proven *true* by science). Instead, he argues that at best, theories can be proven *false* by science. Later theorists such as W. V. O. Quine (1980) and Imre Lakatos (1995) have raised serious questions about even this limited view of the possible philosophical achievements of the natural sciences.

Thomas Kuhn's *The Structure of Scientific Revolutions* (1962) was another seminal book in the development of the study of scientific knowledge. In it, Kuhn distinguishes between what he calls normal and extraordinary research. Normal research is the positivist, progressive, cumulative kind that most are familiar with; extraordinary research is that which leads to the

development of a new theory. Kuhn argues that the major changes of science occur through "paradigm shifts," revolutions in thinking that occur when a group of scientists employs anomalous results to push through a theory change. The part of his theory that is radical is that scientific revolutions are conceived more like political revolutions than tower-building progress. Kuhn argues that different paradigms are incommensurable. In other words, it is impossible to judge one model by the standards of another. Since there is no outside authority to refer to, when scientists are considering rival paradigms and trying to decide between them, the paradigm choice occurs through means that involve non-scientific evidence. In some cases, new theories actually explain fewer results than previous theories (e.g. Antoine Lavoisier's chemical revolution). If this is true, then science involves elements of the irrational and political: It is not as objective as it purports to be.

Within sociology, Kuhn's foundational work developed into what is today called the Sociology of Scientific Knowledge (SSK), which comes in two programs. The weak program of SSK gives social explanations for erroneous scientific beliefs; the more radical strong program argues that sociological factors influence all beliefs, including currently-held scientific ones. A philosophical-sociological program that provides a helpful set of examples for the two programs of SSK is feminist epistemology. Sandra Harding (1991) defines feminist empiricism and feminist standpoint theory, two feminist perspectives on science that mirror the two programs of SSK. Feminist empiricism takes a traditional view of knowledge, generally seeking to eliminate sexist and androcentric biases in science by more strictly adhering to the standards of science (p. 111). Feminist standpoint epistemology, on the other hand, believes that what a society calls knowledge is socially situated (p. 119), and that the particular subjugated situation of women in

society makes them better reporters on the picture of nature and social relations than conventional researchers (p. 121).

At first, scientists rarely engaged with these ideas. C. Wright Mills (1959) argues in *The Sociological Imagination*, quoting Nobel-Prize-winning physicists to bolster his claim, that science normally proceeds by method first; epistemology, if ever considered, is at most secondary. He argues that the epistemology of science is parasitical on the methods that scientists use (p. 58). Scientist and writer Steven Jay Gould (2003) agrees that scientists rarely ever concern themselves with these issues. In *The Hedgehog, the Fox, and the Magister's Pox*, his book written with the goal of mending the rift between scientific and humanist cultures, he explains what he calls a "trade secret" about his fellow scientists:

> The vast majority of us will never—and I mean *never*—even dream about reading technical academic literature from other fields, particularly literature that claims to present deep, critical, and insightful analysis of science as an institution, to reveal the psychology of scientists as ordinary folks with ordinary drives, or to depict the history of science as a socially embedded institution. I mean, why read about it, as written by outsiders, when we live it every single day?
>
> I do not defend—indeed I deplore—this "philistinism lite" so prevalent among my colleagues. But … the existence of this pervasive tendency cannot be denied. Most scientists have never read a technical work in the history or philosophy of science; and most of my colleagues could not identify a single leader in the field—not Thomas Kuhn or Karl Popper from the last generation, and not any lesser light in the supposed "science wars" of our present moment. (p. 101, emphasis original)

Scientists like Gould seek reconciliation between disciplines, but not all agree with his goal. The strong program of SSK offers a challenge that is difficult for scientists to ignore. Some want to fight back.

In the 1990s, the phenomenon known as the "Science Wars" was ignited. Though more sedate research has attempted to analyze the Two Cultures divide and academia in general, it is important to digress momentarily and address the Science Wars. Some see them as a tangent from serious study of the Two Cultures divide, but others see them as emblematic of and embedded in the issue (Labinger & Collins, 2001). I agree with the latter assessment.

In 1994, the publication of Gross and Levitt's *Higher Superstition: The Academic Left and Its Quarrels with Science* was the first significant instance of scientists fighting back. In it, scientist authors argue that literary, sociological, and feminist approaches to science are hostile to science and are characterized by intellectual laxity. The publication of this book brought the issue to the academic public's attention, and within two years, the quarrel would explode in a famous hoax. In 1996, Alan Sokal, a professor of physics and a critic of the intellectual culture of the literary left, submitted his article "Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity" to the cultural studies journal *Social Text* (1996a). The article purported to analyze modern science through a postmodern lens, arguing for a conception of science as a linguistic and political construction, not as an expression of objective reality. Thick with postmodern jargon, the article quoted heavily from the observations on science by major scholars of the humanities such as Gilles Deleuze, Jacques Lacan, and Luce Irigaray.

In a subsequent article in the journal *Lingua Franca,* Sokal (1996b) revealed that his first article was a hoax. He claimed that only did his article contain empty jargon, but he also had selectively chosen quotations from major humanist scholars that demonstrated their lack of

understanding of science, which those familiar with science should have seen. However, it made it past the reviewers and was published. Sokal claimed that publication of his paper proved that the humanities and cultural studies (and, by implication, science studies) was at best sloppy and at worst built upon empty jargon. He went on to argue that the culture of the humanities was deeply in need of the intellectual rigor that the scientific culture employed. Those who disagreed with Sokal saw his paper as an example of interpretive misunderstanding from the scientific culture, arguing that the humanities had their own—albeit different—methods for providing intellectual rigor. *Social Text's* co-editors later argued (lamely, I would argue) that the editors published the piece not because they thought it had philosophical merit, but as a "'document' of that time-honored tradition in which modern physicists have discovered harmonic resonances with their own reasoning in the field of philosophy and metaphysics" (Robbins & Ross, 1996, p. 55).

Snow's lecture, reactions to it, and the Science Wars are clear instances where the Two Cultures phenomenon takes place. In all of these situations, an attempt at probing across disciplinary boundaries resulted in misunderstanding, frustration, and conflict. Social and organizational studies have been more placid and offer some helpful developments in attempting to describe the Two Cultures issue.

3.3 SOCIAL AND ORGANIZATIONAL EXPLORATIONS OF THE GAP

Broader sociological perspectives that look at academia as a whole have been much less controversial. For example, Becher and Trowler's 1993 study *Academic Tribes and Territories: Intellectual Enquiry and the Cultures of Disciplines* is a grounded sociological study that

rigorously analyzes the institution. Becher and Trowler's study sees itself in the tradition of Adams' *The Academic Tribes* (1976), which anecdotally examines universities as a political organizations ("microcosmic nations of a very special sort") (p. 2). Becher and Trowler examine the ways in which the organization of a discipline might be related to that field's topics of study.

It is important to note that the question of how many cultures exist in academic life is not resolved in this study. As Becher points out in an earlier article entitled "The Academic Profession" (1987), some social scientists believe that faculty members represent a single culture, whereas others say academia's cultures are so diverse that to even compare data is deeply problematic (pp. 272-273). Researchers such as Becher find themselves faced with the dilemma of needing to locate the precise moment when subjects enter this community. Becher deals with the problem by acknowledging the fuzzy boundary between insider and outsider.

> There is no precise point at which people begin to identify closely enough with a discipline to wish to become practitioners of it. Or at least, if some individuals can identify a clear moment of transition, the biographical locations of that moment will vary from one to another, ranging across the whole span from relatively early childhood to late maturity. Commonly, the characteristics of a given discipline begin to come quite sharply into focus at the undergraduate stage. The intelligent student becomes more fully aware of the boundaries and content of the subject, and the perceptive student begins to recognize its specialized language, its permitted modes of argument, and its characteristic intellectual style. (pp. 281-282)

The point of a grounded study is to avoid imposing a model on a subject under study, allowing the theory to be generated out of the experience (Patton, 2002). This seems to be an appropriate approach, then, for Becher, since he is not certain as to the number of cultures under study.

Therefore, the fundamental question may be skipped over in the search of information that can be more broadly applied. However, Becher convincingly and helpfully shows how undergraduates can be considered members of an intellectual culture.

Becher and Trowler (1993) argue that "the ways in which particular groups of academics organize their professional lives are intimately related to the intellectual tasks on which they are engaged." They draw "a distinction between the social aspects of knowledge communities and the epistemological properties of knowledge forms," purportedly looking at how the two influence each other "to highlight a significant number of situations in which disciplinary practices can be closely matched with the characteristics of the relevant domains of enquiry" (p. 1). Utilizing the previous work of Kolb and Biglan (who are discussed in the next section), Becher and Trowler use a heuristic model of four academic cultures: of "hard pure," "hard applied," "soft applied," and "soft pure." This system has the advantage of taking into account both epistemology and social characteristics of academic cultures (p. 12). The study does demonstrate correlations between these aspects of academic life. For example, they state that intellectual communities with rigid epistemologies such as the hard sciences punish divergence easily, and communities with more loosely knit epistemologies do not (p. 37). However, Becher and Trowler do not seem to achieve their stated goal of discovering influences between academic societies and their epistemologies, as their study does not indicate how these aspects of academic life influence each other. Observations such as these do not help to elucidate the influence of culture on epistemology (or the reverse), but they do clarify the Two Cultures issue. The connection of epistemological and sociological issues is a critical part of the Two Cultures discussion, as the field of science studies attempted to demonstrate.

Studies such as Clark's *The Academic Life* (1987) demonstrate yet another way of approaching the problem. Clark describes this work as an "organizational approach" (p. xxii) to understand the modern American academic profession, although it might be better described as historical. Tracing the historical development of the American university, the book analyzes the modern profession as a diffuse, super-specialized, and extremely diverse organization. The diversity of higher education in the modern American context hardly allows for many comparisons without an organizing framework, but the historical approach of this book provides a helpful model for demonstrating that the various models in which higher education professions exist today do so for contextual, historically contingent reasons. The model this book follows almost raises every academic discipline to its own level of a culture, which does not provide a helpful lens for examining the Two Cultures issue. However, in pointing out that academic cultures develop in part because of their history, another facet of academic culture is illuminated.

3.4 PSYCHOLOGY EXAMINES THE GAP

There have also been attempts at analyzing different academic cultures by using the model of the natural sciences in psychology. Most studies seem to describe features of people in different academic disciplines and create heuristic models to demonstrate similarities and differences in their features.

For example, Kolb (1976) conducted important studies to categorize human learning styles, which in his later work (1981) was used to examine how those learning styles line up with academic disciplines. Kolb's results are easily applied to undergraduates: Tests of learning styles can be (and are) conducted on undergraduates to categorize their learning styles and help

recommend majors to them. Other tools like Holland Codes (Holland, 1973) and other psychological models are put to the same use. Another psychological/sociological study was conducted by Biglan (1973), who developed a model of academic disciplines by studying faculty members at a small liberal arts college and a major research university, asking them to sort disciplines into categories based on the participants' perception of those disciplines' similarity to their own field of study. Using non-metric scaling, Biglan developed an XY plot where the horizontal axis came to denote applied vs. pure disciplines and the vertical axis came to denote natural sciences vs. humanities, in effect developing a model with four cultures. The "Kolb-Biglan classification of academic knowledge" thus consists of the aforementioned categories of "hard pure," "hard applied," "soft applied," and "soft pure." Studies such as these do not address conflicts across academic disciplines, but the do show that scientific models can be applied to analyze academic-cultural differences.

Less well-known psychological work has also been conducted specifically on undergraduate students using a Two Cultures model. For instance, a study by Schuell (1992), examined undergraduate education majors, finding that most identified strongly with one or the other side of the traditional Two Cultures dichotomy. Utilizing a Two Cultures model, Pollio (1996) examined the difference in undergraduate experience for students in humanities and natural science courses. He found that "good" professors from different academic disciplines were judged by their students on different bases. Successful science professors were seen as impersonal and factual, whereas successful humanities professors were seen as solicitous of student input and often connected classroom material to "the real world." Further, students who expressed that they had good science professors usually used words like "understand," whereas students who praised humanities professors used variants of the word "interest" (pp. 16-17).

Although my study does not utilize a scientific model, the presence of other studies on undergraduates using a Two Cultures model shows the different kinds of information that can be obtained.

Despite their drawbacks, social, organizational, historical, and scientific perspectives that look at *all* academic fields (instead of just looking at the natural sciences) provide the interdisciplinary context lacking in science studies. However, the problem of defining or describing the boundaries between academic communities still stands unsolved.

3.5 INTERPRETIVE COMMUNITIES

There are two difficulties to overcome before using the Brackenridge Fellowship to examine the Two Cultures. One of the difficulties in dealing with the Two Cultures issue is that of typology—the necessity of drawing clear (if only heuristic) boundaries around cultures in order to examine them. The other difficulty for this study is the claim that undergraduates are socialized members of these cultures. They are, after all, only conducting research and majoring in these fields; they may very well have different vocational aims than these academic disciplines. These final hurdles remain before undergraduates can be used to examine the Two Cultures issue, and it is here that the notion of "interpretive communities" becomes useful.

In 1980, professor of literature Stanley Fish developed the notion of interpretive community to describe a curious issue that concerns literary theorists. Although literary critics in some historical eras believed that what an author intended to say constituted the real meaning of a text, twentieth-century literary critics do not generally consider authorial intent to be the last word in interpretation (Wimsatt & Beardsley, 1954), (Barthes, 1977). So hypothetically, a text

could have as many meanings as there are readers. Even worse, if a critic imagines forward into the future, he or she could imagine that there could potentially be an infinite number of meanings for any text. For literary critics and professors, the concern is that the field could devolve into complete subjectivity.

However, Armageddon has not arrived. It is true that there is rarely one agreed-upon meaning of any text, but it is also the case that in the field of literature, readers cannot get away with saying a story means anything that they, in their whimsy, imagine. Somehow, groups tend to come to agreement on meanings of texts, and although there are disagreements over meaning, there is still, more importantly, agreement. Fish conducted an experiment to examine this phenomenon.

In his essay "How to Recognize a Poem When You See One," Fish (1980) describes how on one particular day, he taught two consecutive courses in the same classroom and decided not to erase the blackboard between courses. He had written five authors' last names on the board for his first class to tell them what to read for the next day. As the students in his next class came into the room, he told them that the words on the blackboard formed a word-poem like the ones they had been analyzing in recent weeks. He asked them to analyze it, and the analyses developed by his class fell into common categories of analysis. There was not one interpretation for each student; in fact, the interpretations that came about were fairly orthodox, as if the students were using a recipe in order to interpret the text. Fish interprets the result of this experiment (as well as the many times he has repeated it) to show that meanings are created and constrained by communities. In fact, for Fish, meanings can *only* be created when there are communities within which one can express them, and these communities are his interpretive communities.

It is through membership in an interpretive community that undergraduate students can be considered to be members of an intellectual culture. When undergraduate students attempt to learn the jargon and behavior to communicate within an academic discipline, they are becoming involved in the community of that discipline. In the sense that intellectual communities have their own standards of understanding, undergraduates who are in the classroom and who are involved with undergraduate research are on the doorstep of that community, whether they choose to stay permanently or temporarily. Even in the simple case of students taking a single course where they must represent their ideas intelligibly to their instructor and classmates, they participate in an interpretive community. Undergraduates conducting research in an academic discipline must operate even more thoroughly within that interpretive community in order to make sense of their research. Fish's interpretive community idea provides a flexible model for examining these issues.

Interpretive community is a flexible idea that does not require this location of a cultural border. Undergraduates can be considered members of the intellectual interpretive community to a degree that varies with their level of involvement. Students in courses can be considered fringe members, whereas advanced undergraduates who participate in research or take on majors can be considered closer to the center of their interpretive community. To the extent, then, that undergraduates call on interpretive communities to explain their academic field and to question others, they position themselves in academic cultures.

Using the framework of interpretive communities, hermeneutic phenomenology can provide a perspective on the Two Cultures phenomenon that is closer to the ideas of science studies than quantitative sociological and psychological frameworks. However, the quantitative studies demonstrate that there are clear ways of approaching this issue from non-humanistic

perspectives. A hermeneutic study requires contextualization in terms of not only what possible methods are used, but also what possible methods are not used. Any Gadamerian researcher interested in *Erfahrung* truth must be open to other methodologies, especially those outside its horizon, such as those informed by the natural sciences.

As a methodology, hermeneutic phenomenology brings certain advantages. One is that it takes into account epistemological and social/communal issues without needing to prove that one causes the other. By making epistemology and communality different sides of the interpretive issue, these two concepts are seen in a hermeneutic loop, always feeding into each other, with neither being the primary cause of the other. The other advantage of this methodology is how it copes with the delineation of cultures: One need not prove the existence of a culture (much less the existence of only two) in order to suggest that interpretations happen within communities. This model takes participants' words that they perceive academic cultures; the reality of this *perception* is all that is required. The existence of actual measurable cultures is set aside; perception of those cultures is what is studied with hermeneutic phenomenology.

It is this methodology that provides a helpful perspective on the Two Cultures issue. Hermeneutic events occur any time one person tries to understand, whether it is in a small disciplinary community like an academic discipline or a larger interdisciplinary one like the Brackenridge Fellowship.

4.0 AN INTRODUCTION TO BRACKENRIDGE

The directors of the Brackenridge Fellowship for 2007 were Dr. Larry Ebbs and Abraham Len. Dr. Ebbs ("Dr. E." to his students) also held the position of Dean of the Honors College and professor at the university. Abraham Len, who was an Academic Advisor in the Honors College and adjunct faculty at the university, was usually referred to by his first name ("Abe") by students. In addition, an undergraduate is usually hired to handle the day-to-day details of Brackenridge. This position has jokingly been called "Brackenridge Czar," and in 2007, rising fifth-year senior Luther Yu held that position. Luther actually held that position from 2004 to 2007, so this was his fourth time in that role. Luther was an incisive and probing member of the community, presenting a deep knowledge of the humanities and social sciences. After graduation in 2008 with majors in philosophy, English literature, political science, and economics, Luther went go on to attend an ivy-league law school.

The organizational side of the Brackenridge Fellowship consists of required Thursday meetings and optional supplemental meetings on Monday afternoons; both sets of meetings run through most of the summer. The mandatory Thursday meetings allow for Fellows to present the progress of their projects. Monday meetings are intended for smaller discussions on readings of interest selected by Abe Len and Luther; also, Fellows are encouraged to suggest readings.

Dr. Ebbs and Abe Len, in their roles as co-directors of the program, give introductory speeches on the first Thursday meeting of Brackenridge. I have been present for the first day of

Brackenridge from 2003 to 2009, and the content is always similar. They explain that selections for receiving Fellowships are extremely competitive and that usually roughly 1/3 of the students who apply for one receive one. They also emphasize the fun nature of the community—these presentations are, and should be, interesting.

May 10 was the first meeting of the 2007 Brackenridge community. In this year's introduction, Dr. Ebbs made the point that most universities have undergraduate research, but what makes Brackenridge special is the intellectually "yeasty" environment generated by an interdisciplinary community. He gave a brief history of the program, explaining the program was modeled after the Harvard Society of Fellows. Both the Society and the Brackenridge Fellowship provide funding to allow a scholar to focus on research without other encumbrances, all in the context of an interdisciplinary community. It is a requirement of a Brackenridge Fellowship, in fact, that students commit to nothing else for the summer: no part-time jobs, no coursework. The $3000 stipend (recently increased to $3500) is provided to make this possible.

Abe Len also gave his introductory speech to welcome the participants, introduce himself, and provide some guidance for the semester. Len explained that Ebbs, who is a professor of physics, has been called a scientist with the heart of a humanist because of his love of the humanities. In contrast, Len said that he has been called a humanist with the heart of a scientist, being a philosopher of religion. For Len, these instances of interdisciplinarity mirror the goals of Brackenridge. He advised the Fellows to think of themselves as teachers-for-the-day during their presentations. However, this might be the most challenging audience these students would ever face, because it would be a room full of smart people who do not know what the presenter is talking about. The presenters therefore cannot rely on jargon to skim over important

points because their audience (hopefully) would not let them get away with it. Luther Yu was also introduced in his role as czar.

My goal at the beginning of the summer was to seek out conflicts of the kind described by Snow: conflicts between people expressing scientific and humanistic viewpoints. These conflicts, I hoped, would yield interesting one-on-one discussions and give me ideas for a later focus group. One concern I had before I even began my study is that, generally speaking, I had noticed the Brackenridge Fellows gradually becoming more polite over the four years that I had observed the program. Such a social tendency in today's college generation—that of politeness and an affinity for rule following—has been documented in sociological works like *Millennials Rising* (Howe & Strauss, 2000). In my early years, it was my impression that students were less concerned about being labeled as the person who asked hard questions or upset people. There were more difficult questions asked, and there were fewer friendships formed in the group in the years before 2007. For example, one student in 2003 changed her intended project—to the surprise of the Brackenridge Directors—and did a Frankfurt-School-inspired project on the repressive nature of the Brackenridge Fellowship. She refused to take questions during her presentation, arguing that permitting questions would allow the audience members a way out of what her project was asking them to do, which was to critique the basis of the Brackenridge Fellowship. The form of the presentation angered one Fellow in the audience so much that in the middle of the lecture the audience member walked up to the front of the room, wrote, "I don't understand. I thought this was a community" on the chalkboard, and walked out. This presentation has become legendary in Brackenridge lore. A document of the presentation has been saved and discussed in subsequent years of the Brackenridge Fellowship. Most current students cannot believe a presenter would treat her audience in this manner.

The following events provided me with an opportunity to select students to interview:

1. On the very first day of Brackenridge, I was delighted to observe Ian Allen get into an exciting and surprising conflict with Andy Underwood that seemed rife with Two Cultures issues.

I knew Ian, a rising sophomore psychology and mathematics major, very well. I had been Ian's freshman advisor and instructed him in a freshman seminar for students receiving the highest scholarship available to incoming freshmen. He was one of the rarely-seen rising sophomores in Brackenridge: Most undergraduates take several years to develop the relationship with a faculty member needed in order to form a viable project, but Ian was very advanced. Ian later added physics to his other two majors, graduated *summa cum laude* in 2009, and won a full scholarship to earn a doctorate in mathematics in Great Britain.

Everyone in Brackenridge was familiar with Andy Underwood. Andy was a rising junior seeking a major in finance and another in the interdisciplinary politics and philosophy (P&P) major, but it was not his areas of study that gave the biggest recognizability to him. Andy was almost always involved in activist activities on campus, from working on university divestment issues to Darfur awareness. He often discussed his concerns about Darfur in the context of his Jewish heritage and desire to see and end of genocide.

Andy was constantly engaged in the Brackenridge presentations, to the complaints of some. He often raised questions with the apparent attitude of being interested, but he seemed to refuse to take presentations on their own terms. Sometimes audience members privately complained that he was asking questions merely for the sake of advancing his own agenda. Elaine Iwinski (a rising junior political science and P&P major, also earning a Women's Studies Certificate), who would be counted among Andy's friends, described his questions that bothered

people as fitting the form, “This is my philosophy of the world and … how is your project furthering that philosophy?” On the one hand, he seemed to be drawing on his role in the Brackenridge Fellowship as an interested participant. His incomprehension of the jargon of natural science presentations led him to a generous conclusion:

> By virtue of it being something that I don’t know anything about … there’s also a good chance that it’s probably good for something…. Because I don’t understand a lot of things…. I feel like…. If I don’t have any idea about it, then … it’s probably good that it exists.

On the other hand, many students had the impression that his deeper pre-understanding was an interpretive agenda. At the most generous, other students would attribute his perspective as coming from his engagement with the social activism community and not just narcissism.

Ian saw his project operating in the discipline of the social sciences. His project concerned applying a mathematical model to arms races. In his PowerPoint presentation, Ian spent some time on the complicated mathematics of his project, but he spent more time demonstrating how he might modify certain models to make them better predictors of arms races. To the entertainment of many in the audience, he demonstrated his model using images from popular culture. For example, a peace-loving nation with little desire for war was represented pictorially by the Quaker Oats Man, and a hypothetical opposing nation with warlike tendencies was represented by a picture of Rambo; both nations had peace-seeking and warlike values assigned to their relevant variables. Ian received applause at the end of the presentation and asked if there were any questions.

Approximately halfway through the question-and-answer period, Andy asked a question that caused murmurs and nervous titters in the audience. He raised the point that one of the

negatives of looking at the issue in this way was that it minimizes the human cost of war, by using numbers to stand for human lives. Maybe, he suggested, Ian's presentation should contain some pictures of people killed by conflict, and then it would be harder for anyone to so easily justify war. Ian graciously addressed the question, explaining that Andy's position was not part of this project. After the presentation, Ian showed more irritation privately. He sat next to Luther Yu and shook his head in frustration. Ian's comments were not intelligible, but he mumbled and indicated frustration with Andy. I interviewed Ian later that same day and Andy the next day.

Ian would be studying abroad during the focus group, so he was unable to participate in it. In addition, after seeing the other participants in Brackenridge I decided against including Andy in the focus group in order to have an even mix of students.

2. If I was lucky to witness Andy and Ian arguing on the first day of Brackenridge, I was equally unlucky to miss an important discussion a few weeks later. At a supplemental Monday meeting on June 4, a group of about a dozen Fellows met to discuss a book called *What We Believe but Cannot Prove* (Brockman, 2006). The book is comprised of short essays by contemporary intellectual leaders from different academic fields. Each essay describes an author's belief (usually related to his or her academic field) that the author believes is unprovable and why he or she believes it is. I was able to attend most of this meeting, but after I left, I learned that there was an interesting discussion between junior Brackenridge Czar Luther Yu and Elaine Iwinski. But first, it is important to introduce these students.

Luther was the only one of the students who in one-on-one interviews reported not liking one of his majors: He did not like our university's English major, but he planned to complete it. He felt that too much time was spent on discussing how much students liked the works instead of applying literary criticism. This is a comment I have heard before from students studying English

literature at our university and planning to go to graduate school: They sometimes feel that their classes are "dumbed down" so students planning on going into education can feel comfortable in the class, given their limited knowledge of and interest in theory. Luther seemed to seek intellectual rigor in all of his coursework, and this fuzzy attitude in English was difficult for him to take.

Elaine was a serious political activist, and her academic interests mirrored her social interests. She participated in College Democrats, Students Taking Action Now: Darfur (STAND), Facilitating Opportunities for Refugee Growth and Empowerment (FORGE), and other student activist groups, marches, and protests. She was known for being a vocal feminist, and this perspective covered socio-political issues as well as academic ones, as she also was known for advocating a feminist standpoint epistemology of science. However, throughout her interviews, Elaine voiced conflicting perspectives. As will be seen, Harding (1991) would categorize her conflicting perspectives as evincing feminist standpoint theory at some times and feminist empiricism at others.

Although Elaine is well aware of the traditions in philosophy and social criticism that inform her beliefs, she often does not seem to recognize the communal basis to her beliefs. Perhaps because she wants to highlight her agency in choosing her opinions, she sometimes argues that her opinions are personal, not determined by her academic setting:

> I think that my criticisms don't necessarily come from like my, I, y'know, I'm ingrained in one discipline that pursues truth, maybe, in a certain way … like, *my* criticisms when I was viewing other people's projects were more um, almost from like my personal philosophy kind of.

After college, Elaine would go on to volunteer with Teach for America and prepare for law school.

Luther and Elaine's conversation concerned how humanities and social science research was harder to prove than research in the natural sciences. They both had at least one major in both the humanities and the social sciences, so they had some interesting background from which to speak. Elaine's position in the discussion was more in line with strong program of constructivist sociologists of science, who argue that nothing is ever really proven, even in the natural sciences. Luther's position was not technically in opposition to Elaine's. He argued that falsifiability is a standard that the natural sciences believe that they follow; this gives research in the natural sciences at least the chance to be disproven, if not proven. Therefore, he argued this made research in the natural sciences more reasonable to treat with language that uses words like "prove."

Luther and Elaine were both later interviewed (on June 13 and June 15, respectively) and both participated in a focus group after the summer (October 25).

3. Anita Iqbal (a rising junior English literature major) was a student who asked interesting questions. An important example came about during Adam Olson's presentation. Adam was a rising senior neuroscience major doing brain injury research on rats; the research project required injuring the brains of rats to conduct the study. At Adam's presentation, Anita asked during the question-and-answer period to what extent Adam was concerned if it was worth killing these rats for the answer to his study. Adam barely paused to answer the question: He was not concerned, and he stated that other researchers were working on that issue. Anita did not follow up, but given that Anita was the only person to ask about the ethics of animal experiments this summer, I considered interviewing her. After she asked more questions on another day (see

event #4), I decided to interview her. Anita was interviewed on July 10 and participated in the focus group. Given the presence of other science majors with stronger opinions and more willingness to speak about them, I chose to not interview Adam or invite him to the focus group.

Anita was doing a project on poetry and was not a very sociable member of the Brackenridge community, although she attended every event. During the more social functions, she seemed to me to have an air of aloofness. Anita was known for behaviors that were both interesting and distancing in their strangeness: She knitted during Brackenridge presentations and brought her pet mouse to the focus group. The knitting gave her the air, intended or not, of having something better to do than watch the speaker, and bringing the mouse, although the other students enjoyed meeting it, got some strange looks. In the one-on-one interview, I asked her if she would say that her personality fit her major, and she made it clear that she thought she could do math, science, or philosophy if she wanted to.

> I really like math, and I enjoy doing math, so I'm not one of those people who is always into literature because they could never do math or they could never do science … I can be extremely strict about logic sometimes, like it it really bothers me sometimes when people are obviously illogical and they won't believe me when I tell them they are.

In addition, Anita was the only student who was at all resistant to any of my questions, again showing her independent streak. When I asked her how she would define what qualifies as research in literature, she prefaced her response with a comment that showed frustration and resistance.

> I don't really know that I could actually give an honest definition because that would imply that I had actually had the desire to think out what a definition would be … which I don't even know, I don't even know if I really *care* about that question.

Despite her resistance, Anita went on to participate in a fruitful interview with me and later in the focus group.

4. Ron Lutz was a rising senior chemistry major presenting a project in computational biology on a molecule called barnase. Ron was known as a very outgoing and kind student. He participated in Brackenridge with a humble and grateful attitude. When he asked questions, he asked them carefully and often qualified them, sometimes to the point of almost stuttering. When he stated his opinions, he qualified them so much with interjections of "maybe," "I guess," and "I think" and worried so much about being misunderstood that his actual position could sometimes be difficult to discern. He worried about presenting both sides of an issue, and if he did not understand both sides, he sometimes ground to a halt. Ron knew that his education was focused toward science, but he was very open to learning about new things. In fact, he started a discussion group that met on Friday evenings to drink tea and have intellectual discussions.

A discussion ensued on July 19 between Ron, Anita Iqbal, and Elaine Iwinski that gives insight into all three of their personalities. Ron explained later in his interview that his presentation ended up turning into a discussion about the way he presented his topic, which seemed strange to him, given his goal of presenting the content of the study. Of even more concern for him was the idea that he might have not been presenting his topic objectively.

Ron had used the phrase "personality of barnase" in describing the behavior of the molecule he was studying, and Anita asked him questions about anthropomorphizing barnase. Ron later recalled how Anita wanted to know if he thought about the molecules as "little things that do their jobs," and he had conflicted feelings about this. He said that he knew from a philosophy course he had taken called "Minds and Machines" how often human scientists anthropomorphize things like bacteria, and he did not want to do that. However, Anita's question

made him realize that in a way, he did think of them that way, even though he knew that molecules move "on a totally different time scale than us which makes it hard for us to think about them as *doing* things."

After Anita's question, Elaine took the discussion further. In his presentation he used words like "toolkit" and "manipulation," which are ways of conceptualizing the work of science that have come under criticism from science studies. Elaine asked him to address the question of the masculine use of terms in science, to many groans from the audience. Ron remarked in our interview that he was very concerned that he had used masculine pronouns to refer to his molecule, but as he thought about it, he realized (with relief) that he had not. Ron and I tried to figure out what made his communication with Elaine difficult.

> Ron: I mean, I know that she identifies herself as as as a feminist … I have an idea of what that is and what that tries to accomplish … and … I agree with [fighting] inequality among genders. That's the way I think about it. And … that question *did* take me by surprise. Like, you know, "Where, where did I, where did I go wrong?"

During Anita's and Elaine's questions Ron clearly was worried that he had said or done something wrong, and he really did not know which way to go, although he was willing to go anywhere.

Ron was interviewed on July 19 and participated in the focus group.

5. Three additional students were interviewed and brought to the focus group because of their comments during and outside of presentation sessions, which seemed especially penetrating, troublesome, curious, or cross-disciplinary. The additional interviewees were as follows:

- Tom Erlen was a rising junior majoring in physics, math, and music, conducting a fluid dynamics project for the summer. I also taught Tom in the freshman seminar for students winning our university's top scholarship. Tom also had won a famous national scholarship as a sophomore, which is a rare honor. He participated regularly through the years in a reading group that I ran called "Pizza and Plays" for reading and discussion of dramatic works for students in any major.

  Tom has been described as being born 50 years too late, as his attitudes and dress bespeak a college professor of the 1950s rather than a student of the current day. He always stands out in a crowd, as he usually wears a dress hat, and he often wears a suit and raincoat in the winter. Tom has almost never been seen in shorts. He has penchants for classical music (he plays for the university's symphony orchestra) and Gilbert and Sullivan musicals. Tom played music by Richard Wagner to warm up the audience before his presentation. "Part of … my presentation, was I wanted to show how, how research was *done*, people…. You know, this is how, this is how a professional does it." He explained in his interview that he wanted to bring back "classiness" to physics.

  > I mean, those guys [at] the Trinity test, they all sat around with … cigars, brandy, and … three-piece suits, and now you just have guys wearing shorts and t-shirts in front of their computers.

  Tom is outspoken about his conservative political attitudes and enjoys sparking debate. During the focus group he explains, "I enjoy throwing things out there to have everyone attack; it's kind of my modus operandi." Tom was described by another interview participant as "very helpful and often inappropriate." Still though, Tom is extremely gregarious. He seems to be aware of his uniqueness, and he is comfortable with it. Others

seem to have accepted his personal idiosyncrasies as well. Tom was interviewed on August 3.

- Isaac Robinson, a rising senior history of art and architecture and communications major, was interviewed on August 10. Isaac was generally a quiet member of Brackenridge during social functions. He sometimes was seen sketching robots on a drawing pad in an isolated corner of the room while the other participants were enjoying each other's company. When he started talking to a person, though, he was very friendly and gradually came out of his shyness.

  For Brackenridge, Isaac was writing a project, based out of an art history perspective, on the design of robots in Japanese and American animation and film. His interests generally were with science fiction, and he eventually went on to graduate school in cultural studies. His interest in the social ramifications of science as well as the humanistic side of art gave him a broad base of knowledge, and he often had penetrating questions for presenters in the natural sciences, social sciences, and humanities.

- Ricky Limbaugh, a rising senior English writing, film studies, and theatre arts major, was interviewed on August 13. I taught Ricky in a freshman seminar and in a humanities seminar during his junior year. He had become an unofficial advisee of mine. We frequently discussed how he saw his blue-collar roots affecting the way he thought of his role in the arts: He thought all work, artistic or scientific, should serve a purpose, whether it was in preserving culture or in making the world better in a different way. He had little patience for art for its own sake. He expressed frustration that other academic disciplines such as the natural sciences gave something back to society in a way that is more visible and more appreciated than in the arts. Sometimes in our advising discussions it seemed

that he bought into that hierarchy as well, viewing the natural sciences as more important.

Ricky also participated regularly in Pizza and Plays, bringing a broad knowledge of theatre history and production to help the group understand those works. Ricky wrote, performed, and filmed sketch comedy with his friends, and he was a regular writer and performer in our university's theatre department. For Brackenridge, Ricky was developing a screenplay for a movie that he would later produce, in which he intended to deconstruct zombie movie clichés by making a zombie movie with no zombies in it. Instead, the movie would be about the people who never appear in zombie movies: the people who get away or the ones who end up getting lost and having adventures unrelated to the main zombie attack.

Ricky was a very engaged participant in the Brackenridge Fellowship and in my research study. Despite the fact that he may have wanted to please me, he genuinely seemed to enjoy working with and learning from other academic disciplines. As he explains in the focus group,

> The interesting thing about the Brackenridge … or any interdisciplinary work—is that it enriches everyone involved and like we are sitting here having this discussion … which could, y'know, spawn maybe like some set of criticism, or some piece of art, or some like social scientist idea about, you know… I can't speculate … but it could spawn something, and [if it] spawns a conversation, and it spawns some sort of … academic fellowship that I think is unique to this sort of community.

In addition, Ricky had recently started a star-crossed relationship with another Brackenridge Fellow that would only last for a few months. She was wealthy, studying

the natural sciences, in a sorority, and planning on going to medical school. In contrast, Ricky had blue-collar roots and was going into the arts, so this relationship highlighted some significant aspects of his personality that were different from hers.

The October 25 focus group, then, contained the following six students who had completed projects or were majoring in the humanities, the social sciences, and the natural sciences: Anita Iqbal (humanities), Ricky Limbaugh (humanities), Elaine Iwinski (humanities and social science), Luther Yu (czar and humanities/social science), Tom Erlen (humanities and natural science), and Ron Lutz (natural science).

5.0 THE NATURAL SCIENCES

This chapter contains an examination of perceptions of the natural sciences and Two Cultures conflicts by Brackenridge Fellows, some of whom count themselves in the community and some who see themselves outside of it. This first analysis chapter develops both a deeper understanding of perceptions of the natural sciences and a description of some of the key aspects of the Two Cultures phenomenon. The students participating in the Brackenridge Fellowship have acute impressions and complex thoughts about the natural sciences.

On the conceptual front, the participants commonly characterize the natural sciences as objective and the humanities as subjective as a counter-example. When they discuss scientific work, the students focus heavily on the project part of research and tend to overlook the larger communal picture of faculty advisement, hypothesis development, potential publication, and so on.

Concerning interpretive issues, the word “interpretation” is used in two different ways in the natural sciences, and the definition being employed shifts back and forth. Interpretation can be true or false: an observation containing knowledge. On the other hand, it can be “just an interpretation,” serving a narrative function to communicate something but not having the ability to be true or false. This ambiguity and casual use allows defusing of potential Two-Cultures conflicts; when students are talking about two different philosophies of interpretation, they can use the same word and think they agree, or hide their disagreement. In addition, in using the

narrative definition, there is nothing to argue about—it is not able to be judged true or false. It may also be the case that the ambivalent language describing interpretations (true/false or narrative—"just an interpretation") functions rhetorically to mark progress in the natural sciences. It seems that students refer to discarded models in the natural sciences as false interpretations, whereas untested interpretations are either potentially true or "just an interpretation."

Issues concerning labor also emerged, almost always in context of comparison to the humanities. During Two Cultures events especially, complaints about the work of the natural sciences compare it to the less tedious work of the humanities. In addition, the humanities do not require the large set of background knowledge needed to do independent research in the natural sciences. However, others complain that this structure of natural science labor means researchers can be "lab stoolies," not really understanding the work that they are doing, whereas in the humanities a researcher has to understand the project.

Finally, the mystique of the natural sciences is addressed. The utility and deep knowledge needed for natural science work leads to prestige for the field; however, it also leads to a closed community. In addition, part of the mystique here is a perceived gap in the amount of common knowledge of the natural sciences as compared to the humanities. This gap contributes to the aforementioned prestige, but it also allows those in the natural sciences to avoid unseemly questions and hide unpleasant parts of the natural sciences.

Overall, in terms of interpretive community, students in this study were always looking for people in a shared-value system they could relate to; in the natural sciences students often looked for people in an interpretive community of objectivity. The only discussion in which I observed what Gadamer would call truth being evoked is in our discussion of a hypothetical

alchemy project. Students all brought their own ideas and enacted them through roles that attached them to larger communities, and yet others' contributions were still able to enlarge the conversation.

5.1 CONCEPTUAL ISSUES

In this section, discussions of epistemology, theoretical perspective, methodology, and interpretation are analyzed. One of the points that will be clear very early is the perception of many that the natural sciences are objective and the humanities are subjective. In addition, this section demonstrates a Two Cultures conflict, showing how students identifying with different sides invoke rhetorical tools to protect their adoptive academic fields.

Discussions of epistemology and theoretical perspective are rare in the natural sciences. The job of the natural scientist is to contribute to the field, not to be a philosopher or sociologist of natural science. In addition, although scientists' work consists finding meaning in data, they are not expected to bring hermeneutic discussions to their publications. However, the goal of liberal education is to expose students to different perspectives on academia, allowing for comparison of these issues in higher education. Interdisciplinary communities like Brackenridge allow and even encourage discussions about these concepts in every field, including the natural sciences. My interviews and focus group provide yet another instigation of discussions around these issues.

5.1.1 Epistemology, Theoretical Perspective, and Methodology

Ron Lutz and Tom Erlen were doing natural science research and planning on future careers in science, and they provided fruitful insights into epistemological, theoretical-perspectival, and methodological issues of their work, both in the one-on-one interviews and in the focus group. Other participants stated critiques of natural science theory, and the focus group provided a venue for those different views to be aired in proximity to each other; it would be enjoyable to say they were in dialogue with each other, but that was not the case. As will be explained, Gadamer describes true dialogue as an event where new truth emerges, and in this selection from the focus group transcript, the participants use the discussion to fortify their own beliefs instead to engage in a dialogue that Gadamer says could evoke truth.

Ron and Tom voice views of epistemology, theoretical perspective, and methodology that are congruent with traditional views of those concepts in science during their one-on-one interviews. They commonly refer to the natural sciences as objective and the humanities as subjective, overlooking the communal way that these concepts are developed and maintained. In describing the natural sciences, Ron explains that the thing that makes natural science special is its focus on epistemological objectivity instead of subjectivity: the belief (which he shares) that there are "truths independent of our knowing them." In the humanities, Ron ponders, "What's absolute about what's being done?" For Ron, this functions as an unasked yet ever-present question that disciplines are attempting to answer. It is how he understands, in a Gadamerian sense, the answers provided by academic work.

Ron's comments suggest a struggle with the issue, perhaps because of the way he values objectivity but does not want to devalue the humanities. He voices an attempt to work out his conflicting opinions on the issue, changing his mind as he goes along:

Ron: I'm not going to *say* that you know, *my* research is objective and *their* research is subjective. I don't want to-

Interviewer: Why not?

Ron: *say* that…. Because … maybe the work they're doing *isn't* subjective. Maybe there *is* you know, an objective you know, truth they can come to. Maybe…. But it just seems like … "I can get my research to somewhere. You can't *go* anywhere with yours." You know, that's not true. In a way, they're trying to understand…I guess, in a way, now that I think about it more you know … yeah, there may be a subjectivity to it, but you know, we're all human beings, in a way and you know, there could be a truth, for us, as human beings—maybe. I don't know.

It seems as if Ron is seeking an objective view of subjective work so he can find value in the work he sees in the humanities. Ron's words indicate a divided loyalty between two different communities: the community of the natural sciences, where he sees himself doing his work, and the community of the Brackenridge Fellowship, where he sees his work in context with other projects. In this passage Ron begins with the assumption that objectivity is a requirement for good research, a very common (some would say necessary) statement for the natural sciences.

The other community whose claims are voiced through Ron is the community of the Brackenridge Fellowship where he was an enthusiastic participant. He frequently asked questions and contributed thoughtful insights to discussions both in and well outside his areas of study. The structure of this fellowship leads to certain effects. As mentioned earlier, being a Brackenridge Fellow means receiving the same stipend no matter the nature of the project, and more importantly it means participating in a community where people with different academic projects are placed on the same level. The required presentations imply that all projects should

all be able to be understood. The structure of the Brackenridge Fellowship implies a democracy of academic disciplines reflected in the goals in liberal education. All of this leads to Ron's dilemma. He apparently wants to say that his counterparts in the humanities are doing something valuable, but his epistemological belief makes that opinion nearly impossible to justify.

Several of the students who were not conducting research in the natural sciences and who did not see themselves as part of that community expressed concerns about the philosophical limitations of science in their one-on-one interviews. For example, Isaac Robinson, who was researching a project in the realm of science fiction, explains that he appreciates the conceit of mankind being "awesome" and able to "kick nature to the curb," but he repeats the concerns of those in science studies who worry that scientists are not usually aware of the philosophical limitations of the inductive logic that they rely upon for validation. For example, he explains that a scientist "can't boil every single atom" of a liquid to see if they all boil at the same temperature, and therefore, one can never know that a measurement like boiling temperature will be correct for every atom of that element in the universe. Anita Iqbal voices philosophical concerns about the creation of hypotheses, referring to a "mysticism" in the process of going from evidence to a hypothesis (which, she notes, ironically adds an irrational aspect to science). Moreover, Elaine Iwinski expresses a concern, based on what she describes as feminist concerns about science, that natural scientists are often unaware that interpretations and prejudices come into their experimental designs.

Each of these students are voicing critiques that have been leveled by various scholars in the tradition of science studies, but these concerns certainly have always been present within the confines of the natural sciences as well. Part of the reason for double-blind studies and control groups, for example, is that it is impossible to be aware of every variable in a study or all of the

assumptions that go into hypothesis-creation, and these methods help researchers to locate these problems. What is more important than the critiques themselves is how these students position themselves against the totalizing claims of the natural sciences. It is not clear how deeply they personally held these views, but it is significant that the students stating their critiques think that these concerns need to be voiced—that the natural sciences in their eyes are prone to, and in some sense blind to, these errors.

In addition, these students are placing themselves, wittingly or not, in a discourse community of knowers. They position themselves as knowing *better* that the way to truth claimed by the natural sciences is prone to error. In this case, the better position is to be aware that the natural sciences will not get one, unproblematically, to the truth. These students (and most scholars in science studies) never go as far as to condemn the scientific endeavor as a whole or propose an alternative to science that provides a more certain way to truth about the natural world. The fact that they refrain from providing a better method has been the subject of frequent critique from those on the science side in the Science Wars. But that is not the point of humanistic and social scientific critiques of the natural sciences.

To *understand* the work of the natural sciences in the Gadamerian sense means being able to imagine a question that the natural sciences answer. For those inside the natural sciences, this question seems to be something like, "What is the best way to reliably learn things about the natural world?" This question recalls Gadamer's description of *Erlebnis*, the experience of truth that is reliably repeatable. For those in science studies, however, the question being answered is something like, "How does the human element affect interpretations of the natural world?" This question evokes the sense of experience as *Erfahrung*, an experience that is new every time because of the changing nature of the human being. If Gadamer is right, and understanding

means imagining a question that is being answered, these fields can share their answers all they want, but they will not be able to fuse horizons until they see the questions the other side is answering. This is part of the Two Cultures conflict, which is demonstrated in action in the focus group.

The focus group contains a discussion where the Two Cultures phenomenon seems to be rampant, and no horizons are fused. The following discussion shows students emphasizing their own horizons, listening to each other only to find a way to reinscribe themselves in their own community. At the end of the focus group, I ask the participants if they want to make any concluding remarks or feel that anything had not been said, and the concluding remarks quickly devolve into a verbal Two-Cultures food fight:

> Luther Yu: I'll stick with what I said earlier, that both humanities and science and natural sciences involve interpretation, but that in the natural sciences, interpretation is being utilized to get at some type of ground-level truth or reality, whereas in humanities, there's an explicit … recognition that the interpretation is itself the result of the work being done.

It is not clear that Luther agrees with the scientific concept of interpretation he describes. Elaine seems to assume Luther disagrees with the idea that scientific interpretation gets to truth, and she pushes his comment in that direction, adding an insult to it: "I'm gonna … agree with Luther with the recognition that science only *thinks* that it's getting at this objective-type of truth."

The battle lines are drawn, and Tom takes up his conceptual weapon: "I'll just vehemently disagree with the Luther-Elaine camp because … falsifiability, falsifiability, falsifiability: take that." There was much laughter at this expression of false machismo. In my experience with Tom's outbursts, people usually laugh good-naturedly, even if they have reservations about the content of his point. At any rate, Tom is drawing on the Popperian

tradition in the philosophy of science (emphasizing falsifiability instead of proof), demonstrating that he can employ philosophy as well. Luther joins the argument, choosing to engage Tom on this philosophical ground.

> Luther: I would like to respond to Tom by saying: What do you make of the fact that the falsifiability criterion is itself unfalsifiable?
>
> [General laughter]
>
> Tom: …. First, I'd like you to elaborate what you mean by it's unfalsifiable?
>
> Luther: That the criterion in and of itself cannot pass its own test because there's no way that we could falsify that criterion of meaning.

Tom's response is characteristically fast and dismissive: "So?!?" Again, there is much group laughter.

Luther attempts to seriously justify his argument: If Tom thinks the falsifiability standard is so strong, Luther will show its limitations. He argues, that one cannot "hold up a standard-bearer that cannot pass its own standard. That doesn't make sense." By dethroning falsifiability, Luther's rhetorical move attempts to remove what he sees as Tom's foundational pillar for his argument.

However, Tom will not have it. At this point Tom disengages from the philosophical argument and attempts to justify his argument by pointing to the real world instead of logic. It will be the real world that will falsify beliefs for him, not philosophy. Unfortunately, his point is made sloppily, and he is caught up in trying to untangle his mistake before proceeding.

> Tom: Luther … the point is it's not about the metaphysical implication of the falsifiability criteria, it's the fact that, if you say gravity doesn't exist and I push you out the window and you die … falsifiability! Boo-yah!

[Garbled comments as many students laugh and try to speak]

Elaine: But that doesn't prove that gravity [exists]

Tom: Okay.… I made a poor statement there…. The easiest statement would be Luther saying, "I won't fall," and if I push him out the window and he falls.…yeah, my first statement … there are more assumptional layers there. But if you make a clear one-assumption statement: "I will not fall … if Tom pushes me out the window," and … you don't do [a] philosophical [trick] … like, "I grab hold of the ledge first! Oh, I didn't fall Tom, did I?" But [if] I'm drunk and I push him out the window and he falls, that's falsifiable right there, because I've showed them: OK, he did fall.

Clearly, Tom is justifying his position in a different way than Luther and Elaine. He is arguing that the natural world is there, no matter what conceptual schemes people bring to it. The real world serves as the foundation for his argument. It is the final arbiter.

However, for Luther and Elaine, the foundation of the argument is philosophical. The focus group is about to end, so Luther and Elaine's final rhetorical move can be charitably interpreted as a way to bring things to a close without starting an explanation of new philosophical issues. At any rate, instead of addressing what they see as wrong about Tom's point, they crash the discussion not by referring to philosophical arguments, but by invoking philosophical authority:

Elaine: You should read some Wittgenstein.

Luther: Yeah, you're making a lot of assumptions.

There is no explanation of how Wittgenstein's philosophy reflects on their argument; the rhetorical force of their conclusion comes from an appeal to authority that is just as logically weak as Tom's appeal to gravity.

In this section, the students' interview comments and the trainwreck of the focus group argument demonstrate how recourse to an academic culture's epistemological, theoretical-perspectival, and methodological belief system to criticize another culture results in a Two Cultures conflict. Part of the conflict comes from the certainty of the natural sciences and the humanities that they can find something that they can call truth. Tom's intractability certainly provides a foil for the philosophically-minded students, but even Ron's calmer and more reasonable points demonstrate the cultural conceptual beliefs perceived to separate the natural sciences from the humanities. The other part of the conflict comes from arguments that invoke rhetorical devices and evidence that do not translate across disciplines. Holding the natural sciences up to the standards of philosophy and holding philosophy up to real-world gravity tests are not likely to convince people on the other side of the argument, but they are still invoked.

5.1.2 Interpretation

It is not unusual for those involved in the natural sciences to see interpretation as an issue that is separate from other issues concerning truth, and Tom and Ron compartmentalized interpretation in this way as well. At different times, they use the word in both of its senses: An interpretation can be right or wrong, and it also can be "just an interpretation." In other words, interpretations can be seen as presenting (or being mistaken about) truth, or they can be seen as a narrative tool, neither true nor false. In any case, truth for the scientific rationalist exists with or without the interpretation, so the interpretation has a relatively weak status.

Interpretation for Tom and Ron is a method to be used to get at the meaning inherent in data. For Tom, "The facts are what are there. The data is what is there," and interpretation pulls the meaning out. Gadamer agrees that the pursuit of truth and the idea that a method can be used

to find it are deeply intertwined in the natural sciences: The pursuit of scientific truth requires a method that consists most importantly in pursuing objective interpretation of data. Interpretation done correctly means, as Ron explains, getting at the meaning inside the data. Giving meaning *to* the results would be imposing one's bias. This position presumes the meaning exists before the scientist arrives to observe it.

A belief in the objectivity of interpretations ignores the fact that "objectivity" is a historically constructed and communally maintained ideal. Neither Ron nor Tom comment on the communal nature of interpretation (source of hypotheses, peer review, and so on) in the natural sciences. They seem to believe that interpretations are verified by the natural world, not by other people. The overlook the way that although the community of the natural sciences grounds solidarity in objectivity (Rorty, 1985, p. 5), the natural sciences still enact an interpretive tradition.

Interpretation for Tom is the "extension of what is observed to what will be observed next or what could possibly be observed." So interpretation not only is finding the truth in the data; if it is done correctly, it allows one to predict future events. The accuracy of that prediction proves the validity of the interpretation. Tom also expressed the belief common among natural scientists that science is self-correcting, so incorrect interpretations will not last long.

It is not just answers that can be interpreted correctly. Tom believes that another benefit of the self-correcting nature of natural science is confirmation that the correct *question* has been asked in the first place. For Tom, in the natural sciences, there is a right question to ask in research. In fact, he defines research as the "pursuit of the right question to ask, and then pursuing it." This focus on the importance of the question is similar to the Gadamerian concept of understanding as being able to imagine a question the statement answers. However, there is

one important difference. For Gadamer, finding a question that is answered is how truth occurs, because understanding is his name for that experience. For Tom, finding a question—and specifically the *correct* question—is how truth is found. The difference in their views is that for Gadamer, there is no correct question insofar as many questions can always be imagined. For Tom, the correct question is linked to the correct answer because they both refer to the natural universe.

One is asking the right question because the right one will always lead to interesting results. He notes that this is not always the case in the humanities; if humanities researchers find an answer that they already knew, then they have not discovered anything. Tom describes this kind of discovery as merely a tautology. However, in the natural sciences, such a discovery signifies a new connection in the universe: A truth that is stated in a different manner in the sciences is a different fact. Tom states the example of electromagnetic fields and photons on the quantum level, which leads back to electromagnetic fields and shows that these different phenomena are different sides of the same phenomenon.

In interpreting the natural sciences to others outside of the field, Ron's interaction with Anita and Elaine during his presentation illuminates the importance of not objectivity, but the *appearance* of objectivity, in the natural sciences. To recap, Ron had used the phrase "personality of barnase" in describing the behavior of the molecule he was studying, and words like "toolkit" and "manipulation." Anita asked him about the way he seemed to be anthropomorphizing the molecule he was analyzing, and Elaine asked him about his use of what some critics refer to as masculine terms in science. Ron clearly understood their concerns. He explains in the interview that that Anita wanted to know if he thought of barnase as something that has human traits, and that Elaine wanted to know if he had "a grudge against women." Ron's

biggest concern about these questions, apart from defending himself from the suggestion of bigotry, is around the possibility that he might not have been seen as objective.

Ron reflects on the process of viewing a scientific presentation:

> When I'm listening to your response, I'm not only listening to your response, I'm trying to listen to … what I can learn about *you* by listening to your response.… If I'm looking at somebody else's scientific research … I want to be able to trust them in their methods so I want to hear about their methods.

Ron sees this as an opportunity to see how objective the researcher truly is. He is concerned about the fact that scientists get too attached to their own ideas, and Ron wants to know researchers are open to new ideas.

> My boss has told me this enough. There aren't enough papers that get published about failures. There aren't … enough papers that get published by people that tried things that didn't work…. the papers that get published … a lot of them are you know, flashy results and you take a closer look at it and you start to wonder…. when I'm listening to … people in my field, I want to be able to … trust their results and that they're doing science in a way that they should be doing science…. Truth, not their own you know, agendas.

The concerns Ron has about the questions he asks and wants others to ask concern objectivity; however, they are also communal. He wants to know if he can trust a presenter. He wants to know if they are in his community of trust and if they share his value of objectivity. In this way the scientific tradition and community emerges in this discussion.

Unfortunately, objectivity can have disengaging effects for those outside of the field. Isaac approaches his critique of interpretation in the natural sciences from this direction. For Isaac, interpretation is finding meaning in the context of things a person already knows, and

likes, dislikes, and feelings are part of that context. Isaac argues that this is the case in the natural sciences as well, though most students he saw in that field over the summer did not seem to be aware of it—most seemed to be searching for interpretations that would provide them with universal truths. Because of his belief in the personal nature of interpretation, at the beginning of the summer he expected students to evince personal, emotional ties to their projects similar to his own. When these did not manifest in the natural science presentations, Isaac was disappointed. For Isaac, the natural science presenters' goal of objectivity (or at least of not highlighting the extent of their emotional engagement with their topics) led him to an emotionally dry experience for many of the summer's presentations.

Isaac gives the example of Regina Adams' project that looked at fossilized horse teeth to study the history of environmental changes. He imagines a questioner asking why this was her passion, and he supposes that she would feel that she could not just say, "'Look, I'm a scientist. This is what I need to do, is work as a professor's assistant' … like they're just a lab rat or … a lackey for the summer…. But that's … what science does." (Isaac's comment recalls Kuhn's concept of normal science.) In the presentations, Isaac wants to see the same passion he feels for his subject.

> And I guess the fact that we're all calling it [all] … research, I guess we expect them to be, you know, curing cancer and in love with everything they do…. when I was listening there, I was disappointed … that these things weren't peoples'… passion…. if someone was studying horse teeth, I wanna know that, like … their grandma ranched horses for forty [years]—you know? … because [I] pored over my application and … this is my heart and soul.

In attempting to understand this phenomenon, the question Isaac imagines scientific presentations answering may be, “What does this mean to you?”

Isaac goes on to explain the different feelings he gets from listening to different presentations.

> There’s nothing really when you’re sitting there that gets you in the mode for, like, “Okay, now let’s shift our mindset to, you know, a lab report … setting.” Not that they were all like that, but … it’s like dipping from cold water into hot water.

Perhaps it is naïve for Isaac to expect the kind of personal engagement he felt, but it would be a mistake to call this engagement subjective. Being connected to one’s work may be a personal phenomenon, but the *value* of loving one’s work and finding identity in it is a manifestation of a cultural tradition. As philosopher Charles Taylor explains, the sense of modern individualism that leads to this kind of expectation is a product of many historical factors, including such diverse forces as Enlightenment rationalism, mass public education, and the diversity of contemporary vocational choices (1992).

In addition, Isaac is looking for a communal experience. He wants to know if there are students doing science research who are in his community of loving what one does. A possible source of this expectation is the democracy of disciplines (mentioned above) indicated by the structure of the Brackenridge Fellowship and liberal education. He explains again that the reason going between presentations feels as jarring as it does is “The fact that … we’re all assuming that all our research is kinda gonna have the same feel to it, you know?” Isaac wants to have a similar interpretive experience in fields that view interpretation concept differently. The point here is that Isaac’s interpretation overlooks the communal basis for his concern just as much as the scientists’ do.

Perhaps the best example of the way interpretation is seen in the natural sciences is demonstrated by the way it treats old interpretations, which is discussed in the focus group in a comparison between the natural sciences and humanities. The natural sciences have a tradition of discarding old interpretations, whereas the humanities have a tradition of keeping them. This approach functions to validate the work the natural sciences. Implications for how the approach of the humanities validates *its* work through its treatment of old interpretations are discussed in Chapter 6.

In the focus group, Anita explains that in the humanities, research is often very interested in the interpretations that have come earlier, whereas in science, "presumably you wouldn't actually have to read anything that anyone has even written to eventually prove it yourself." Ron immediately disagrees. He asks if she has ever heard of the expression "Stand on the shoulders of giants," explaining that scientists are always building on previous work. I ask Anita if she meant that a researcher in the natural sciences only has to stand on the shoulders of the previous giant, "but you don't have to know any of the giants under *him*," whereas in the humanities such as literature, it is important to read literature from every period. She concurs.

Ricky Limbaugh points out how past interpretations are seen as *incorrect* in the natural sciences, whereas they are not conceived of this way in the humanities.

> There are just things that [are] accepted as *wrong* in the scientific world [like the] plum pudding model of an atom … the only one I remember from high school … there's my well-rounded education right there. But … for us [in the humanities], we can say that this artist is irrelevant and then you know, they'll be perhaps rediscovered or re-appreciated.

Luther uses this idea to illustrate the idea of the way the natural sciences conceive themselves.

> In a sense there's *progress* being made in the sciences … there is some *implicit* recognition in the sciences that when something better fits the data, this will become the accepted model, but nothing like that occurs in literature or in philosophy.

Luther returns to this issue several times in the course of the study, as he sees it as one of the key differences between the humanities and natural sciences.

Those wishing to defend the natural sciences can access the two different senses of the word interpretation to that end; it is very convenient to have these different senses of the word available. For the natural sciences, the sense of "just an interpretation" is a rhetorical device that can be used to defend the field in the face of philosophical challenges. On the other hand, "wrong interpretations" can serve as guideposts to mark progress; in order for there to be progress, interpretations need to be discarded. They need to be seen as incorrect—not just unhelpful. It is not as meaningful to move past "just an interpretation" as it is to move past a "wrong interpretation." One area for future research is on this topic of how an interpretation is thought of in the natural sciences before and after it is discarded.

5.2 PRODUCTION

In this chapter section, discussions of labor/utility and mystique are analyzed. These two different senses of production are seen as central and peripheral, respectively, to the work of the natural sciences. Discussions of the labor and utility of scientific production seem to place it as fairly central to the discipline of the natural sciences, given science's focus on method and usefulness. In the discussion, I initiate a conversation about a hypothetical Brackenridge project in the field of alchemy that challenges the concept of use value for the students.

When discussions of mystique and prestige occur in the natural sciences, the students seem to position these concepts as tangential to the work of the natural sciences proper, as side benefits or problems that prevent the real work from getting done or being communicated. Discussion of both senses of production occurred in the Brackenridge conversations.

5.2.1 Labor and Utility

Labor and utility are two significant issues in the natural sciences: How do scientists and others think the work of science is done, how do they feel about how it is done, and how do they feel about how the made product is to be used? In the Brackenridge interviews, the consensus is that work in the natural sciences is time-consuming and difficult. However, not every student speaking for the natural sciences agrees that intellectual engagement is necessary for scientific work. The idea of pure research is also critiqued. The focus group's discussion of use value of research highlights the different aspects of the seemingly straightforward concept of use.

Tom expresses a common understanding of the labor process in the natural sciences: that it is time-consuming and demands a significant amount of background knowledge before one can participate. However, when he speaks about what he had to learn and put up with in order to do his project, he intertwines a somewhat petty complaint about how little effort is required in the humanities:

> I had to read, I had to go to lectures, I had to invest a huge amount…. I mean … the Navier-Stokes equation, I had to learn about that.… the math involved … you have to take three semesters of calculus to get to the point where you start to know [it]. People who just never had to go through all those classes could sit there and … "I always had an interest in this section of the world, and you know, I kind of … *know* one or two things

> from having you know, just kind of sat around. I *wonder* about that.…" But I was kind of annoyed that … I have to work so dang hard … and … I don't get good research 'cause my LDV equipment stops working for a week at a time, and they just sit around and read books about, you know, Africa.

The issue that leaps out of this quotation is that this work is not just demanding and frustrating for Tom: It is demanding and frustrating for Tom *in comparison to* other kinds of research he is aware of. He draws on this natural science community to establish his feelings about his work, and his Brackenridge community to establish the comparison between the demands of the different kinds of work. It certainly would be possible to state that work in the natural sciences is time-consuming and mentally difficult without comparing it to another field. However, the structure of Brackenridge encourages comparison of these issues among fields.

The opposite side of this issue is that if science relies so thoroughly on technical method, students can participate in science research without understanding it. Ian Allen, whose project was in the social sciences but who was also majoring in physics, uses the phrase "lab stoolies" to refer to students who are doing research in the natural sciences but who might not really understand what they are doing; in his words, they are "faking it" by not really understanding their work at a deep level. As an advisor, I have heard this kind of disengaged research work described as "bottle washing." In addition, although he was studying in the humanities, Isaac's earlier description of a "lab rat or … lackey for the summer" reflects this concern. Ricky Limbaugh has a similar impression, developed from when some Brackenridge Fellows' research advisors answered audience questions when the presenters could not do so. For Ian, this is partially an economic issue: One cannot expect an undergraduate to play with a $2.5 million microscope, for example, without strict supervision. Both Ian and Ricky voice deep respect for

the time-consuming and sometimes tedious work of the natural sciences, but both also express respect for the deep level of knowledge needed for humanities research: There is no equivalent term for “lab stoolies” or “bottle washing” in undergraduate humanities research, even though disengaged grunt work may be taking place.

Furthermore, Elaine expresses a concern about pure research, which she calls a prejudice: She states that she has a prejudice for practical science that helps people. Concerning Regina Adams’ horse teeth project, she explains, it may be interesting and teach the world something, but

> it seems like it just takes a lot of steps to eventually get to something where [they develop] a new farming technique that’s going to help … people who are starving.… [There] may be some other things that can be done more immediately … that wouldn’t take as many steps to have a really big effect on people who are really desperate.

Elaine has participated in many kinds of advocacy, and her academic perspective also follows that model. It is not uncommon for scholars with social justice concerns to critique the idea and practice of pure research, since 1) if pure research is truly useless, it wastes scarce resources, and 2) calling it pure research belies the human factor involved in creating any research. Even the purest research is never *intentionally* conducted with the goal of being useless. Instead, for pure research, application value is not explicitly taken into account in the early stages. In Gadamerian terms, pure research can be understood by imagining the question the researcher wants to answer with it. In this sense, it is not purposeless.

During the focus group, I propose an experiment in order to draw out the students’ ideas about the idea of utility. I suggest we might imagine a student applying for a Brackenridge Fellowship in which he or she proposes an experiment in the now-discredited field of alchemy.

For the most part, the study participants react by trying to draw the idea into their own worldview—to place the idea within their own horizons. At first, I was concerned that they were using the issue to reflect their own agendas. In addition, were they so used to finding value in each other's research that they would go in for any nonsense if Brackenridge sanctioned it?

Those concerns may have been valid, but I also believe the students were employing their own opinions and concerns to make sense of the question. As Gadamer might ask, what else could they do than to try to fuse their horizons with the horizon of the alchemy question in order to understand it?

> Elaine: What if the project['s] justification was [to recognize] some sort of problems with the research method…. something about the repetition of the experiments or the order in which they did experiments or how they came up with the experiments was … intriguing or new?
>
> Interviewer: Development of scientific method or something?
>
> Elaine: Yeah yeah, exactly … it would have some application if what they're actually studying isn't the chemistry of, like, turning lead into gold, but the process of science.

So Elaine thinks the application of this project could be to lead to better science. Ricky takes the idea in the opposite direction. Fully owning the artistic concern present in his idea, he thinks an alchemy project

> could [inspire] me to write a short story about the, the new alchemists or something like that, and … to me, that, that gets at … and this is the artsy thing coming out, but emotional truths or … spiritual truths … about the values of people and things like that, and whether or not we subscribe to that I'm sure most of the scientists … don't and that might be a generalization on my part, but I think those things are valid.

I had brought up the idea of an alchemy project to Luther in our one-on-one meeting, and he was looking forward to talking about it again because he had thought about it since. He thought everyone could agree that Elaine's idea about the project could have some merit, telling the researcher something about science in general or about research in general, but he thought a serious attempt to turn lead into gold

> is also an interesting question, because we we tend to think of science as producing a result, right, being a new material or a prediction about the world or something to that effect, and this person, this alchemist, is trying also to produce a result…. Whereas in the humanities, we're not trying to produce that same type of result, we're trying to produce an interpretation. So … the fact that this person is trying to produce a result, to me, kind of situates … them in the field … of science as such, and then things become much more problematic because alchemy is a discredited science.

I had expected more from Luther here but what he does here is succinctly describe the problem. At first I was disappointed, but then I realized this was how he was coming to terms with the issue, in much the same way he was handling his role in the focus group. His role as Czar for four years had put him in a position between Fellows and Directors, required to be helpful to both. He was summarizing, using the alchemy question pedagogically to further the discussion.

Tom's take on the question is characteristically entertaining and uncharacteristically permissive:

> If we had unlimited resources, I'd say sure, let this guy go off do that, because there are plenty of people who once again just verify old results. And … the value of what he would be doing would be, as long as he didn't do any tests that were shown in the history

books to have already been done, to once again verify the result that, “Hey! The atomic theory of matter actually holds true!”

[General laughter]

Tom’s use for alchemy is to buttress the natural sciences. Just as with the others, his engagement of the question is tied to his academic concerns.

Labor and utility are two areas that provide much of the ground for argument or resentment in Two Cultures conflicts. These are issues that go beyond the academic and touch on the personal, whether students want them to or not. Although the alchemy thought experiment is on its face about something that is useless, it invokes responses that concern use in the phenomenological sense: “How can I use this idea?” and “What does it mean to me?” Truth is “what is opened up in the encounter between the familiar and unfamiliar” (Lawn, 2006, p. 62), and the alchemy discussion shows one of the few instances in which *Erfahrung* truth is obtained in this study.

5.2.2 Mystique: Prestige, Jargon, and Reception

The mystique of the natural sciences is analyzed in this chapter. Two topics figure prominently as issues that provide both benefits and liabilities. First, the prestige of the natural sciences is perceived almost as a given; however, some feel that the community of the natural sciences has an insularity that is unnecessary, vain, and maybe even contrived. And second, just as Snow claimed 50 years ago, there is a perception that most people are expected to know more about the humanities than they are about the natural sciences. This perception can be frustrating for those in the natural sciences when their audiences cannot understand their presentations; the perception

also can be used to excuse talking over people's heads and to hide unpleasant aspects of the work of the natural sciences.

Neither Ron nor Tom directly spoke about the prestige of working in the natural sciences. However, they do state claims about the nature of the natural sciences that clearly add prestige to their work. Snow's praise of scientists and Gadamer's concern about science's claims to universal knowledge are both evident here.

For Tom, natural science is a field that is "seeking the linguistic map of the universe," and humans are like children learning that language. Ron asks, "Would you rather have you know, the truth that *is* the truth or would you … rather have the truth that is only the truth part of the time?" Tom states his prejudice that human beings are making progress, and he believes the scholarly enterprise should be geared toward that goal. (These opinions taken together lead him to voice strong and interesting views on humanities research, which is seen later in Chapter 6.) Tom's comments recall the similarly laudatory statements of Snow when he describes scientists' optimism as their inclination "to be impatient to see if something can be done: and inclined to think that it can be done, until it's proved otherwise" (1998, p. 7) and that scientists have "the future in their bones" (p. 10).

Ricky attacks the presumed level of difficulty of the natural sciences in comparison to other disciplines, not on the basis that it is inaccurate, but on the basis that it leads to a division between students. He describes a grade-point-average snobbery in students studying the natural sciences that functions to denigrate high GPA's in the humanities:

> Talking about GPA—as … students do, especially honors students, and I say … "I have a 3.9," and they're like, "Well, I'm in engineering and I have a 3.5 but I mean, c'mon …

look how smart we are in engineering" or they make t-shirts that say … "Engineering: We do it because it's impossible," "We work so much harder than everybody else."

Ricky explains that the closed community of the natural and applied sciences leads to a "level of condescension" against other students, himself included.

> If somebody takes a theatre class who's not in the program, we're delighted, we're happy to have them.… we talk to them about what they're doing, whether it be … a single mom needing to take it or a football player or … a math major…. But [for them] there's this scoffing … like … "A nursing student was in our O-Chem class and you wouldn't believe what she said." And I don't think we have that.

Ricky thinks that the pride he is critiquing comes from the fact that students in the natural and applied sciences have always been told that their fields are impressive. Ricky explains that the natural and applied sciences have a social cachet as requiring more intelligence: "Y'know, no one says, 'You're as smart as a literary theorist!' It's, 'You're as smart as a rocket scientist." Ricky later turns this conversation to a kind of a defense of the humanities, which is investigated in more detail in Chapter 6.

In the final part of this discussion, Ricky explains what he thinks is at the root of much of this disdain: frustration by some students in the natural and applied sciences that they are not allowed or allowing themselves to study something else which they might enjoy more.

> I think part of it is jealousy because … not all engineers enjoy what they do. I've met many who do and those are the best engineers, and I'm sure Frank Lloyd Wright really loved architecture, but I have not yet met an actor who's, like … "I just, I'm in it for the money, I really hate it, but I'm in it for the [money]"…. And I think that's the sort of

trade-off that people expect, but ideally we could all be in the fields we want to be in and there'd be none of this animosity.

The other side of this issue, the idea that students in the humanities are doing what they enjoy, is also discussed more deeply in Chapter 6. But in any case, Ricky has painted at least part of the mystique of the natural and applied sciences with his own condescension, seeing students who are unhappy and taking it out on others.

Another important part of the mystique of the natural sciences is the perception of a lack in public common knowledge of the sciences. This was an issue that concerned Snow (1998) and was evidenced on the first day of Brackenridge in the Ian Allen-Andy Underwood discussion. Snow argued 50 years ago that there is not an analogous level of socially acceptable ignorance in the humanities. He complained that this "pole" of social attitudes about science gives an unscientific flavor to general culture as it "radiates its influence on all the rest [of society]" (p. 11). Ian and Andy's conflict actually has two interwoven issues: the ignorance gap and Andy's concern that numbers dehumanize people; the gap issue is examined here, and the dehumanization question is taken up again in Chapter 7.

To briefly reiterate, Ian's project concerned applying a mathematical model to arms races. Andy asked if Ian agreed that one of the negatives of looking at the issue in this way is that it minimizes the human cost of war by using numbers to stand for human lives, and that maybe his presentation should include pictures to demonstrate that true cost. Ian explained that Andy's position was not part of this project, but after the presentation, Ian sat next to Luther Yu and shook his head, mumbled, and indicated frustration with Andy.

In his interview, Ian expressed frustration that the audience members do not generally know enough math to ask technical questions about projects and therefore have to resort (as

Andy did) to fundamental questions that don't take the subject on its own terms. (Andy does indicate in his interview that there were some mathematical parts of the presentation that he did not understand.) Ian says that he does not want to argue that the science culture is superior, but he feels that there is no expectation that a person studying the humanities should know important things in the sciences—such as what an integral is, which he describes as "a pretty big deal." He continues sarcastically, "like maybe the greatest intellectual triumph of like, the past 500 years, but you know um who's to say?" Ian even expresses commiseration with audience members, explaining how the gap in minimum expected knowledge between the humanities and natural sciences the makes *him* feel when he listening to presentations. During a humanities presentation, if he is not able to understand it or come up with a question, he feels like he missed out on something, like it was his fault, because of this expectation of knowledge.

Other students across the disciplines agreed with Ian's assessment of the knowledge gap. Luther, who had attended many Brackenridge presentations over the years, still came with the assumption that he would not understand natural science presentations and was surprised when he did. He also says that he has no means of judging if a project in the natural sciences is well-constructed most of the time because he lacks the technological knowledge that would be needed to do so. Elaine says she is skeptical when she understands a natural science or math presentation, because she assumes it has been oversimplified and she is not getting the real story. She assumes mathematics research is inaccessible to her.

In discussing Andy's questions, Ian immediately refers to Snow and *The Two Cultures.* I had previously instructed Ian in a course where we used Snow's book, so he was familiar with it. Ian expresses concern about parroting Snow, but he finds Snow to be largely correct in his description of the gap in expected knowledge. Ian knew that my project was following the lines

of Snow's concern, and my questions to him reflected some of Snow's ideas, so I was concerned that Andy might be parroting *me*.

> I've read *The Two Cultures* and everything and I try to think of myself as like trying to break the norm, like I know a lot about literature, I try to learn about philosophy … I don't like trying to buying into like C. P. Snow too much, but … I feel like so much hatred coming from the other side sometimes like and not even *hatred* but just, um, the the *ignorance* thing. Like, "Yes, Andy, of course you know we can't put pictures into a differential equations model, like what do you *want* from me?" I … I didn't know what to tell 'im…. But … that's the honest-to-God truth … I don't know what they expect.

A subtle shift occurs in this segment of our interview. Ian starts talking about Snow, then Andy and the reaction the discussion evoked in him, and then he says he doesn't know what "they" expect. Ian has taken on Snow's argument, combined it with Andy's comments, and generalized them to a general cultural observation about the humanities.

If Ian was parroting me, he did a marvelous job of making it believable, because he presented some clever illustrative examples about *The Two Cultures* and ignorance from the humanities side. If a student gives a humanities presentation, he explains, there is an expectation about how fundamental the question can be.

> Like I shouldn't be like, "What is a book?"
>
> Interviewer: [laughter]
>
> Ian: You know, or … "How do we know that *words* are *real*?" You know … something like that. But I feel like … if at the end of my talk, someone had raised their hand and been like, "What did *this* sign mean?" [writes an "8" in the air] … I would have been

like, “Oh, jeez, are you kidding me?” *but* I wouldn’t have been like, “Did you *not* go to elementary school?” … whereas like if I was like … “Who’s Homer?” you know like

Interviewer: Right

Ian: there would have been, like, “Have you been *alive* for the past 20 years?”

So for Ian, it would be laughable to ask what a book is, if words are real, or who Homer is, but it would acceptable (though strange) for someone not to know the number eight.

These examples are both entertaining and entirely unrealistic, perhaps indicating some self-deception on Ian’s part in his interaction with Andy. (Andy is not entirely innocent either, which is addressed in Chapter 7.) The problem is not Andy being unable to understand the technical details of the problem, although that was part of the experience. By framing it as ignorance, Ian does not have to deal with the substance of the question. In this way, the gap works *for* him.

Anita’s experience with Adam Olson is another example of how the knowledge gap and jargon can be utilized for rhetorical ends. During Adam’s neuroscience presentation, she asked if his research group was conducting any long-term studies to see if their experiments were worthwhile, given that they were damaging the brains of rats. She explains to me that if animals were being killed, a researcher should really think about whether taking those lives was worth it. She says that Adam’s answer was full of jargon but seemed to imply that other studies were doing that. Anita seems to feel that Adam threw jargon at her to confuse her and derail her line of questioning. She says that it didn’t really matter if others were doing it: “My [question] was about *his* study, because he’s killing these particular rats, so it doesn’t really matter to me if other studies are you know studying long-term effects.” She wanted to know if that was a concern for

his research group, and his jargon allowed him to give an answer that did not directly answer her question.

Anita also thinks that in addition to jargon serving to confuse questioners, it directly functions to obscure disagreeable aspects of their work. For example, she says that Adam's explanation that the rats had to be "sacrificed" after the experiment was ridiculous. She seems to understand this term is common to biological research, so it was not a criticism of Adam personally. It was a criticism of the way the natural sciences bury unpleasant parts of their work under euphemisms.

She compares the problem of understanding the natural sciences to her experience with literature. For her, it is *more* important that people are able to understand science because of the direct effect it has on human lives,

> whereas literature studies … they probably aren't going to cause a release of some sort you know of ridiculous, like, Dostoyevsyox or some shit that's going to just totally mess people's lives up.
>
> Interviewer: Like a poisonous existential … cloud?
>
> Anita: [Laughter] Yeah, although that stuff can be dangerous in its way I guess, you have to admit.

However, for the natural sciences, which in certain cases work with animal and human lives, jargon is more than entertainingly confusing—it is an important part of medical research for millions of people.

The mystique of the natural sciences comes from a combination of the prestige of the field as well as the perceived gap in public knowledge of science. Although some in the natural sciences might complain, this gap translates into a mystique of the unknown as well as room to

hide unpleasantness. It also allows those identifying with the natural sciences to overlook social factors that go into the making of science and to make claims of truths that are always true.

Truth, however, is one concept that provides some difficulty for those who would raise the natural sciences over other disciplines. Those identifying with the humanities can and do remind others that truth is something that has always concerned their field. This is one of the primary bases upon which the natural sciences are challenged by the humanities.

6.0 THE HUMANITIES

Just as with the natural sciences, the Fellows interviewed in this study have much to say about the humanities. In terms of conceptual issues, just as in the last chapter the participants commonly characterize the humanities as subjective and the natural sciences as seeking objectivity, belying the communal aspects of these fields. In addition, like the natural sciences, the participants concentrate heavily on the project part of research instead of the larger communal picture of faculty advisement, thesis development, potential publication, and so on. This focus serves to reinforce the perception that the humanities are subjective, since they are so focused on what seems like individual interpretations. The humanities are seen (again, as compared to the natural sciences) as ambiguous and lacking falsifiability, which is a source of criticism for those in the natural sciences and frustrating for even some in the humanities.

In the humanities, the sense of subjectivity also applies to interpretation. Students describing the humanities discuss two different types of interpretation discussed, with different expectations for each: individual interpretation of works of art or texts, and interpreting academic work to others. The former is viewed almost entirely as subjective, and the latter is viewed as communication and does not carry the baggage of being called subjective. In addition, in addition to creating art and ideas, creating interpretations is perceived to be a major goal of the humanities.

Issues concerning labor also emerge, usually in context of comparison to the natural sciences. The humanities are seen as creative, preservative, and organizational. Much of the work of the humanities involves contextualizing works in terms of their history and the history of interpretations attached to them. There is embarrassment and humility expressed over the low use value of the humanities.

Finally, the mystique of the humanities is addressed, which seems to consist of several issues. The first is economic and contextual: Given the less secure and lower-compensating job path leading out of a humanities degree, there is the sense that students studying the humanities must be studying them out of love of the subject and can be proud (or even gloat) over this. They can claim to be true seekers of knowledge, not paycheck-seekers. Furthermore, as the issues of communication and truth find their roots in the humanities, students aligning themselves in the humanities can invoke this history in arguments, claiming that they are defending the tradition of what it means to be human.

Overall, in terms of interpretive community, students in this study were always looking for people in a shared-value system they could relate to; in the humanities students often looked for people who value subjectivity, appreciate art, and value individual enjoyment of their projects. The only discussion in which I observed what Gadamer would call truth being evoked is in a summary of ideas of interpretation in the humanities as compared to the natural sciences.

In this chapter, views of several issues in the humanities are considered in order to map out perceptions about the disciplinary division from students who see themselves inside and outside of the field. These perceptions and conversations illuminate cultural issues of the field that lead to Two Cultures events.

6.1 CONCEPTUAL ISSUES

Whereas conceptual issues are sometimes seen as tangential in the natural sciences, discussion of them is part of the work of the humanities. Discussion of these issues is ever-present in the humanities: the issues of not just what is done, but how it has come to be done that way and why one does it that way.

Just as in Chapter 5, this chapter is divided into two sections: 1) epistemology/theoretical perspective/methodology and 2) interpretation. It is even more difficult in the humanities than in the natural sciences to make the case for dividing interpretation from other conceptual issues, given that they are so deeply intertwined. However, two points make separating interpretation out into its own section a useful strategy. First, taking student quotations on their own terms has led to this strategy for organization. Second, having symmetry with Chapter 5 provides a way to examine issues across disciplines. Gadamer argues that seeing interpretation as separate from issues of truth is a consequence of modern scientified thinking which makes it *even possible* for these students and for much work in the humanities to talk about truth as separate from interpretation in the same way as with the natural sciences. This section allows expression of examples of this separation.

6.1.1 Epistemology, Theoretical Perspective, and Methodology

In the interviews, I discuss the epistemologies, theoretical perspectives, and methodologies of the humanities in the context of the natural sciences with the students. Two related issues are commonly raised: 1) the relative ambiguity of the reason for conducting projects in the

humanities as compared to the natural sciences, and 2) the lack of falsifiability in the humanities. Analytic philosophy is the branch of academia that deals most primarily with reason and truth, so these complaints about the humanities may seem absurd. However, in Two Cultures discussions, when students criticize the humanities they usually exclude analytic philosophy and focus on art and literature, which explains how ambiguity and lack of falsifiability can be generalized to this disciplinary division.

In her interview, Anita Iqbal says that with the natural sciences, she does not like the fact that there are "strict rules about how you … conduct things." She likes the fact that in her chosen field of literature she believes, "Anything it wants to be in its domain can be within its domain if it feels like it,"—reason and logic as well as irrationality. Anita also links the humanities and natural sciences to the personalities of the people who operate within them.

> You get this sense that the people who are on the science side are … more likely to like strict definitions and rules whereas people on the literature side are more willing to accept ambiguities or even embrace them (laughs).

Anita seems to think of ambiguity in the humanities as almost a historical and cultural accident.

Gadamer would probably point out that ambiguity in the humanities is as ancient as the humanities themselves, and this ambiguity has not always been seen as a flaw. The modern view of ambiguity as weakness, Gadamer would argue, is a consequence of many traditions. These traditions would include some parts of ancient philosophy, but most importantly in modern times he would probably name the Enlightenment, the Scientific Revolution, and Kantian aesthetics. Anita's praise of her discipline's inclusiveness is the kind of comment that gives ammunition to critics like Alan Sokal who claim that the humanities are too lax. It may be true that with the rejection of authorial intent as a guidepost for meaning, contemporary literary criticism has come

to contain a plethora of modes of acceptable interpretation. This makes the field appear subjective or incoherent. However, the history of hermeneutics shows that authorial intent is only one (historically recent) interpretive position in the history of reading. In addition, a Gadamerian interpretation of the openness of the field of literature (as well as the contemporary multiplicity of interpretation strategies) is that it provides an opportunity for even more experiences of *Erfahrung*, revealed truth.

If Anita is a student who speaks in muted praise of ambiguity in the humanities, Luther Yu's tone is one of express concern. The reader will recall that Luther is the only student interviewed who did not like one of his majors (English). Luther feels that one of the things that is most ambiguous about the humanities is its lack of falsifiability. In my one-on-one interview with him, we discuss the argument he and Elaine Iwinski had at their supplemental meeting group discussion.

Luther says that one of the points he and Elaine discussed was whether there is such a thing as falsifiability in the humanities. Luther explains how he argued that scientific theories are generally considered falsifiable, but there is nothing similar in the humanities. For example, no one has invalidated Aristotle's *The Metaphysics*, though Aristotle's *The Physics* is now considered incorrect science. Luther was not arguing that scientific theories *are* truly falsifiable (at least by the standards of deductive logic, since he was aware that empiricism relies on induction), just that they are *considered* so by scientists. By the lights of the natural sciences, the humanities are not falsifiable, and this seems to be a weakness to him. The Gadamerian perspective here would be that this is a "false transference" of the set of standards from one field to another [1963/1976, p. 175]. It is a selective mixing of traditions to apply the standards of one field to another.

Luther describes how Elaine had argued that although the word falsifiable is applied less to the humanities, falsification does occur. Luther described Elaine's side of the argument as being that general disdain or condescension from one's intellectual community in the humanities constitutes falsification, independent of the philosophical issues involved. So for Elaine (and by the light of scholars in the sociology of knowledge), the humanities are in fact falsifiable, ambiguous or not.

Ron Lutz and Tom Erlen are even less charitable to the humanities in their interviews. Ron is concerned about the ambiguity of motivating questions and the lack of guidance provided by something like a scientific hypothesis. He mentions Allison Tomko's project, whose goal was to compare the American Transcendentalist writers with the Beat Poets. He believes that whatever interpretation she makes will not be testable. Comparing and contrasting the movements does not seem to lead to anything: He wonders what the "real question" is. In the humanities presentations, he complains, the real questions go unspoken. Ron and Tom seem to feel that in the natural sciences, the presence of a hypothesis keeps the researcher on track. Of course, Ron and Tom are overlooking the communal nature of hypothesis development. Hypotheses are not objectively developed. Even if a researcher comes up with a question without help, that researcher is informed by both a scientific tradition and by a problem that is to be solved.

Tom complains about both the ambiguity of motivating questions and the lack of falsifiability as well. He explains that because interpretations in the humanities lack an equivalent system of falsifiability and verification like the natural sciences have, researchers in the humanities do not have to care about the right question to ask, and so they do not. He thinks the field's apparent acceptance of subjectivism functions to allow bad interpretations to flourish.

I ask Tom how a humanities researcher would know that he or she is asking the right question or getting the right answer to it. Tom's answer is quick and shrewd: They would know "when they're surprised." In Tom's eyes, the humanities researcher should worry

> when they say "I expect A" and they get A. When they expect A and they get B, that's when they know they've got something. They've pushed beyond what they could think of. They've pushed beyond their subjective ability. And then you say to yourself, ah, "No longer am I projecting my subjective self onto what I'm researching."

Again, Tom is focusing on the project part of research, overlooking the communication and tradition that informs scientific work. He goes on to provide an example of his concern:

> I mean, I think there's a lot of humanities research that is utter bunk.
>
> Interviewer: OK
>
> Tom: Uh, you know, feminist epistemology?
>
> Interviewer: [laughs in surprise] OK
>
> Tom: You know, such like that. Uh … whereas in science, you have much more of the, the sense that … the right question *has* to be the right question. You can't … come up with something that is bunk and expect it to, to fly for very long because in the end … the universe is there whether we like it or not. And … when the right question comes along, it will rip you apart 'cause you can't control what the outcome is.

For Tom, the humanities lack a safeguard to prevent a researcher from projecting what he or she wants to find into the world: Tom explains that a feminist epistemologist could look for chauvinism in the natural sciences and find it, but that did not prove its existence. Given his Popperian (falsification) view of the natural sciences, if pressed, Tom would probably agree that the natural science could not *prove* anything either. However, that would just make his point

more, that non-empirical fields have no business interpreting their work as proving the objective existence of something. Although the style of Tom's points is tendentious and provocative, the substance of his argument is serious and repeated in the comments of others. Polite students in the natural sciences like Ron as well as more outspoken students in the humanities like Ricky Limbaugh repeat the argument that the humanities do not have empirical falsification like the natural sciences and thus are more permissive. As will be seen in the focus group, invalidation occurs by other means in the humanities.

In the focus group, after a discussion of research in the natural sciences I ask the group for some generalizations about research in the humanities; the students' comments are contextualized by that contrast. Their discussion about the humanities melds the issues of the ambiguity of guiding questions and the lack of falsifiability, stumbling onto the real problem: insufficient awareness of the communal nature of interpretation in the humanities.

Luther thinks an indication of what is different in humanities research is that the humanities use words like "thesis" instead of "hypothesis," and theses are not verifiable in the same sense as hypotheses are. In literature, for example, researchers gather evidence to support their interpretations, "but implicit in that interpretation is the recognition that someone could disagree with you." He argues that there is no evidence that could be brought to bear to falsify an interpretation. Here he invokes the narrative sense of interpretation used in Chapter 5 in which "just an interpretation" does not carry the ability to be true or false.

Ricky attempts to bring scientific terminology to the arts. He raises the point that from a fine arts context some artists see their works as experiments. He mentions the author Luigi Pirandello who, when speaking about his play *Six Characters in Search of an Author* described it as an experiment to see what happens when he put the six characters in a dramatic work. Ricky

explains that this is the way some artists would talk about what they do. It is possible that falsification for Ricky could be constituted by failure of the work to be appreciated. Even though Ricky might be able to speak of experiments in the humanities, he could not speak of a hypothesis.

In keeping with this science-influenced view of the creation of art, Ricky complains about the state of contemporary literary criticism. In criticism that he is familiar with, Ricky explains, "Even though they claim to have a thesis of some sort that is defensible, I'm not sure that it's there." Ricky complains that in literature as well as in criticism, a lot of times it just seems like he is reading "random thoughts put down on paper that claim to have a direction," but he is not sure that they do. Furthermore, this kind of work is published in major journals and becomes the standard to which other work must aspire. These criticisms recall Sokal's criticism in his hoax—that the humanities are being smothered by empty jargon. Ricky points out an example of an interpretation that seems absurd to him but is still counted as valid in literature.

> The thesis is unfalsifiable even by the content that comes after it, which is something that has been [laughing] difficult for me to deal with … I was reading Shakespearean criticism, like, "I'm going to prove, uh that … Falstaff and Hal [two characters in Shakespeare's *Henry IV Part I, Henry IV Part II,* and *Henry V*] were in homosexual relationship," and then we're talking about symbolism with the sun half a page later which has nothing to do with homosexuality, but I'm supposed to take this as, like, one coherent whole that is in, you know one of the most respected Shakespeare collections in the library.

In Shakespeare studies, the idea that Falstaff and Hal might have a homosexual relationship is indeed currently considered one of several valid interpretations. It is clearly not subjective; at the

very least, the peer reviewers of the article found it reasonable. Just as Ron and Tom do, Ricky is overlooking the communal nature of interpretation.

Drawing a contrast, Ron Lutz makes a comment that reinforces Ricky's point. Ron says that a clear distinction between research in the natural sciences and the humanities is that the natural sciences *must* be falsifiable, whereas the humanities do not. Ricky seems despondent about the current state of literary criticism and half-jokingly mentions one way falsification can occur. In doing so, he stumbles onto the key to the problem.

> Ricky: The only … safety for this sort of behavior in the humanities is that later on other people are just going to scoff at you by name in their essays: "When so-and-so said that Hal and Falstaff were homosexual, he he brought the sun-thing up and it's absolutely outrageous, and here's what I think."

Even though it might not count as real falsification for him, Ricky's final comment suggests that the disdain of one's intellectual community is a form of falsification. This is the point Elaine was making with Luther. Even though in the humanities there is not falsification in the same sense as in the natural sciences, perspectives do come to be rejected by academic communities in the humanities.

The fuzzy boundaries and apparent subjectivity that are criticized in Two Cultures discussions actually function to make the humanities a difficult target. Their ability to reflect or absorb ideas from other fields has been one of their most valued traits. However, using standards from the natural sciences to judge the humanities will never work in favor of the humanities. They will never be able to measure up to a standard of empirical falsifiability, a standard that is outside of their tradition. What Gadamer would argue for is a re-invigoration of the idea of

Erfahrung truth, which is not falsifiable. The humanities have a rich tradition that need not be devalued.

6.1.2 Interpretation

As mentioned above, interpretation in the humanities is not really separable from epistemological, theoretical-perspectival, and methodological issues. However, given the way that interpretation has been separated from other issues in the natural sciences, it has sometimes come to be seen that way in the humanities. The humanities (especially outside of analytic philosophy) suffer because interpretation in the contemporary era has come to be seen as mostly subjective. However, as Gadamer succinctly puts it, "self-interpretation receives a primacy that is not justified by the facts" (1960/1976, p. 80). Just as Stanley Fish's poem experiment demonstrates, meanings are not subjectively generated; if they were, for every text there would be at least one interpretation for every reader. Instead, interpretations are generated in interpretive communities.

For those who believe the humanities *are* subjective, though, subjectivity requires certain defenses and invokes certain criticisms. Students in the Brackenridge Fellowship also often have this belief about the subjectivity of the humanities and voice it in discussions with me. The impression of interpretive subjectivity does much damage to views of the humanities—by those within its borders and those outside of them. Both Isaac Robinson and Ricky Limbaugh discuss the issue of the subjectivity of interpretation in the context of the value of subjective feelings and thoughts, but they have different perspectives on it. Tom wholeheartedly criticizes the subjectivity he sees in the humanities, and in the focus group, a discussion of old interpretations

shows how learning and growth occur in the humanities, despite the negative aspects of its interpretive reputation.

In discussing his general thoughts on what interpretation consists of, Isaac immediately focuses on the *reality* of interpretations. “I feel anything that you see or any way that you feel … it’s not an artificial feeling…. Like, this whole thing [reality] isn’t a virtual reality simulation.” To make his point, he indicates a sign on my desk in ancient Chinese characters that translates to “Open for Business.” Isaac knows that he cannot read the sign, and he explains that if the sign means “happiness” but makes him conceive of anger, “it might be untrue in a certain context, but … like, this symbol carried that meaning to somebody, so … like, my feelings aren’t lying to myself.” Isaac is considering the difficult issue of justification of meaning. He argues that if he reads a sign and it creates a feeling, the feeling cannot be “wrong,” although that feeling may not have been the intention of the author.

If a symbol means “happiness,” but it makes him think of anger, then Isaac seems to think he has evidence to say that meaning comes from the subjective reader—not the author’s intent, and not even from the text itself. Isaac is conducting a self-experiment similar to the one Descartes did hundreds of years ago. Just as Isaac sees that he cannot be mistaken about his feelings, Descartes argued that he could not be mistaken in thinking that he was thinking. Both Isaac and Descartes realize they could be mistaken in *what* they are observing (they could incorrectly perceive something), but they could not be mistaken in supposing that their brains were thinking.

However, Isaac does not seem to recognize that if he has a reaction of anger to a sign that means “happiness,” that reaction would have to be historically and socially conditioned. There would be a reason, based in how he had learned to interpret other things in his past, why the sign

makes him react the way he does. Therefore, even though individuals do experience phenomena and interpret them, these interpretations are indications of connections with interpretive communities, not examples that prove the subjectivity of interpretations.

Ricky also comments on the humanities, specifically in literature and the arts. Ricky sees himself as a craftsman, interested in creating meaning and communicating it. He separates himself from artists who claim to not care about audience reaction or reception. In addition, in the light of his respect for the natural sciences, Ricky seeks fundamental issues to compare between his field and the natural sciences. In our conversation, then, Ricky explains that the fundamental thing that interpretation works with in the natural sciences is "concrete facts" and in the arts it is "emotional truths." This view draws on his acting training and mirrors some of the views of art popularized by Romanticism.

This view also makes some of his work in the humanities frustrating to Ricky, as he explains in the focus group excerpt in the previous section. "We in the arts are so—everything is so open to interpretation and there's such a free spirit mentality." He explains the negative effect of "extreme subjectivity" on the ability to have productive dialogues about art. "A lot of times in class I will respond to someone's interpretation and I'll say … 'Where's that in the text?' and I'll get these … evil looks because … God forbid I challenge someone's interpretation." Ricky's classmates apparently do not realize the basis of traditions on which interpretive stances are built. Neither, of course, does Ricky demonstrate this awareness. Instead, he seeks a normative stance (that of meaning being "in the text") rather than recognizing the fact that his position as well is socially developed. The belief that meanings exist "in the text" is, as the history of hermeneutics shows, one of many possible hermeneutic positions. It is just not one that is particularly popular today in the field of literature.

From here, Ricky moves to recognize the social nature of interpretation when authors and artists present their work to the world. He sees conversation and dialogue as providing a standard for determining validity in the humanities. Dialogue gives a person a chance to rework and revise an opinion. He sees this being important not only in criticism, but also in the creation of art.

> Revision you know, is so central to art, particularly writing, that there's never a concept of the finished product. It's like, y'know, I think Fellini said "You never finish a film, you just run out of money," and I think that, however arrogant that is—and I think it is arrogant—um, it- there's some truth to that.

Ricky explains that his screenplay project is an interpretation of a thesis, but it will never be a complete interpretation. Input from other students had been invaluable to him in developing his project. Perhaps because he wants his work to communicate with the outside world, he thinks the insights of other Fellows are valid to bring to his interpretation. This is why it is not subjective to him.

Tom could be relied upon to voice an even harsher critique of interpretation in the humanities. As he had done many times in Brackenridge and in Pizza and Plays, Tom advocates in the interview for viewing authorial intent as the guide for true meaning, and the ability to communicate that meaning as the measure of quality. His is a conservative hermeneutic position, making interpretation the job of retrieving or reconstructing true meaning. It has been brought up to him many times that this is one among several hermeneutic positions, but he refuses to take that idea seriously.

As discussed in Chapter 5, the focus group's comparison between interpretation's role in the natural sciences and humanities led to a discussion of why past interpretations are rejected as false in the natural sciences but not necessarily in the humanities. The mirror half of that

discussion appears here. The consensus in this section is that in the natural sciences interpretation is seen as merely the means to an end, whereas in the humanities interpretation is both the means *and* the end. In other words, new interpretations are part of the product of the humanities. However, this means old interpretations must be retained and treasured to demonstrate past achievements, not discarded to mark progress.

Tom has a very subjective view of the artistic experience. He explains, "One of the reasons why we don't have to … care about science that's proven wrong in the past is that … science is not about each new person … rediscovering science." It is true that in the natural sciences, reading work that has been disproven usually would be viewed as a waste of time. However, Gadamer might argue that the dialogue with the past that is not only necessary but is also ever-present is becomes even more hidden under Tom's model of interpretation in the natural sciences.

Tom goes on to discuss interpretation in the humanities in the context of his thoughts on interpretation in the natural sciences:

> The purpose of literature and art is for the person reading it to rediscover. If … everyone stopped reading art then art would be pointless, whereas … it would be kind of bad if you didn't have engineers to maintain things, but say you … just stopped, it's not like that would necessarily harm society as long as you could maintain the current level of technology.… if people stopped reading art it would kind of nullify the reason for it to be there. … art must renew itself to a new generation for it to be useful…. And I thought that was just an interesting difference in terms of who the audience is and why we do these actions.

It is important to delineate between an individual person's experience with a piece of art and the phenomenon of aesthetic appreciation. It is certainly the case that the phenomenon of viewing art entails a single person, and art gets most of its perceived worth from the fact that individual people have these reactions to it. However, interpreting art, having ideas about how to perceive it, experiencing emotional resonances—these things all occur because of the way traditions have been absorbed by that person.

Anita continues with Tom's turn toward the humanities. She says it is called the humanities because "it's about the human." She explains that the fact that it has to renew with every generation is part of what makes it human. Here Anita draws on both an argument from etymology and on the traditional prestige of the humanities in western culture and academia.

Anita goes on to explain that interpretation itself can become a work of art in the humanities: "Critical writing or some sort of writing *about* literature … could… actually be seen … itself as an object of art." This is a recognition of an important organizational aspect of the humanities: its ability to make new work for itself. The natural and social sciences do have the genre of work known as the meta-analysis, where past publications are seen as a subject of analysis. For the most part, though, no scientist would claim that a scientific research paper should be thought of as part of the natural world to be analyzed. However, the humanities have the advantage of being able to create more subjects of study just by writing about other subjects of study.

In what Luther self-deprecatingly calls a "sweeping claim," he summarizes some observations for the group:

> Science and the humanities both involve interpretation, but they do so in dramatically different ways. In the sciences, interpretation is involved, but there's a recognition that

> we are interpreting the results … to get at something more fundamental, some type of fundamental truth about reality…. In the humanities, interpretation is also involved, but it's almost, I nodded my head vigorously while Anita was talking because I think the interpretation kind of … takes the foreground and there is no … attempt to use the interpretation to get at a baseline truth. The interpretation is what it is and that's what's deemed meritorious in the humanities
>
> Interviewer: Interpretation is the result?
>
> Luther: Right.… it's the end *and* the means, in a sense.

The other participants in the focus group seemed to agree, or at least not object, to this interpretation. Luther is fulfilling admirably the role that he has adopted. He also is adding something very helpful to the discussion. By taking the ideas of the other students and combining them, Luther has created something new.

Interpretation may be both the end and the means in the humanities, but that does not mean the field is subjective. As demonstrated in the discussion above, interpretations of interpretation (the traditional realm of the humanities) occur in a process of dialogue with the past and the present. Whether one is reading books or arguing with fellow students, the work of interpreting is a dialogue that leads to modification and learning. This is what is produced in the humanities.

6.2 PRODUCTION

The topic of production in this section on the humanities, just as in Section 5.2, includes the issues of labor/utility and mystique. In this section, the work of the humanities is tied closely to

creation, interpretation, and contextualization. The mystique of the humanities is seen in the way students claim their field as the center of human experience. Both of these issues are seen as central to production in the humanities.

6.2.1 Labor and Utility

In the interviews and focus group, comments tend to separate fine art from other humanities; the labor and utility of these areas seemed to focus on creative labor and contextualizing labor, respectively. Most of the discussions focus on contextualizing labor, which has to do with developing interpretations in the context of traditions. Unlike in the natural sciences, the utility in the humanities often seems to be in the contextualizing and interpretation—not in what is done with the knowledge gained. Maybe because of the glaring absence of obvious utility of the non-creative humanities, there appear several in-depth discussions of this topic.

A charitable evaluation of contextualizing work is that it situates current work in the view of tradition instead giving the false impression that all important work in the humanities consists of original thoughts. Some of the students' negative evaluations tended to be around the fact that this labor can sound subjective (as discussed in the previous section), and it can seem like the researchers are not doing anything new or important. These positive and negative evaluations can be illuminated by applying Gadamer's evaluation of tradition to these students' statements and discussions.

In one of the rare discussions of creative labor, Ricky discusses the labor of the arts, justifying them by invoking their utility in preserving culture. He seems to feel that this strategy requires him to first address the more obvious utility of the natural sciences. He explains that every community needs engineers—everyone needs buildings to be built. But everyone,

according to Ricky, could read Hemingway and Shakespeare and that could suffice for the level of cultural knowledge they would need.

> We don't *need* new writers in the way that we *need* new doctors and new engineers. And … we need new writers, but I'll admit, not as many.… I wish that our culture could accept the fact that, for example, theatre is important because it keeps regional culture alive and so is music. Regional musicians don't make tons of money, bluegrass musicians, folk musicians, um, y'know, uh, Mongolian uh fiddle players … don't really make money…. But I think that we need to acknowledge that culture is important and that without culture we don't have … as rich a life, and I know that … we need to worry about building aqueducts and hospitals before we worry about building theatres and I'm fine with that.

Creative, fine-art labor is just as focused as the natural sciences on creating a product, but artists in these Two-Culture conversations are forced to deal with the fact that there is not the same use value for art as there are for, say, aqueducts. Ricky addresses this problem by showing the use value of the arts.

Isaac explains how the kind of labor he sees himself doing over the summer is interacting with a community: A critical element of the labor of his project was a labor of contextualization.

> One thing … I've been learning and that Nancy [his project advisor] helped me to see, was that … good research should always been taken within the context of what everyone else has said about it already and … what exists out there already. And … I see research, um, at least in my field, as … taking all of the ways of thinking … and maybe … some new ways of thinking and … organizing these ideas…. It's … looking at … everything people have said, thought, and written.

Here Isaac seems hesitant to consider organization a part of real research; he makes sure to insert the fact that some of his own ideas will be going into the work. It is possible to see in Isaac's opinions, in the denigration of organizing and the praise of original thought, effects of the Enlightenment focus on rational progress and the Romantic focus on how art glorifies its creator.

Tom is always one to explain the difficulty of doing good science work, but he provides some honest input on the humanities labor issue when I ask him about his prejudices. He is careful to note that this prejudice might come from his own insecurities about maybe not getting enough done in science, but he shares his prejudice that it is simply easier to come up with humanities projects. He thinks he could probably come up with ten humanities projects by just thinking about them, whereas coming up with projects in the natural sciences requires much more base knowledge and interaction with the natural sciences community. (This comment is also related to his earlier comments about having to work so much harder than those in the humanities do.) It is indeed the case that the structure of academic fields does require more base knowledge and economic support before one can do work in the natural sciences. The question is what is gained by comparing research in this manner. Rhetorically, comments like these tie the work of developing a project to the difficult manual labor of the natural sciences themselves. Although somewhat trifling, comments such as these attack the labor of the humanities by making it seem trivial and easy.

In the focus group, Ricky highlights again the fact that in academia, there is a difference between the fine arts and other humanities in their perspective on the labor/utility issue. The fine arts are focused on a product, whereas outside of the fine arts the humanities seem to build on top of a pre-existing product and do not concern themselves overmuch with utility or creating something that people outside of the field can use. Over the years as his advisor, I have discussed

this issue with Ricky many times, as it ties in with his desire to contribute something valuable to the larger world. In our advising conversations over the years, I had expressed the doubt that all work needs use value in the way that he described it, and so his comment is contextualized by both our previous conversations and the fact that I am present.

> Ricky: I think you find that in every discipline that there are some people—me being one of them—that buy into this idea that anything that happens in academia is going to … potentially help the everyone else or the world as a whole, because I look at it, like, y'know carpenters build houses, mechanics fix cars, and I need to do something … probably at this table, I know at least one would disagree with me there, so I think that that's a problem that spans disciplines.
>
> [general laughter]
>
> Interviewer: Ricky looked at me.

Anita turns the conversation to a focus on personalities and tries to speak for the humanities in general, which Ricky refuses.

> Anita: I'll say that people … both in the humanities and in the sciences, just to be doing that work, they must automatically have some assumption that what they're doing is actually more valuable than the other field.

Ricky responds that he does not think his field is more important: "In fact, it's probably less important than most fields. I'm just glad that those fields have enough people in them that I can do what I do." What surprised me was the way Anita backed off her comment immediately: "I feel some- I feel that way sometimes too." Perhaps she was cowed by Ricky's response into saying that she agreed with him, or maybe his answer allowed her to voice her real feelings on the subject.

Ricky then brings the discussion back to the discussion of utility, ending the conversation with a trail-off that says more about his concerns than perhaps words could:

> We have to do the best that we can because … if we sit around and say how we can't do things and can't prove things as us humanities and arts folk are wont to do, nothing ever gets done. As is evidenced from how [little] we've accomplished.
>
> Luther: Sit in any English class and you will instantly agree with Ricky.
>
> Ricky: Whereas they build, engineers build bridges … I, y'know….

Just as with the issue of falsifiability, when they are held up in comparison to the utility of the natural sciences, the humanities will never compete evenly.

6.2.2 Mystique: Prestige, Jargon, and Reception

Where the humanities do compete with the natural sciences, however, is in the area of mystique. Even though the humanities are not curing cancer or creating new ways to feed the hungry, they have their own spirit of self-justification and prestige. One area of mystique that comes out of this study is that the economic reality of its lower use value makes it risky to study, so there is an air that the people who study it really want to be there, whereas people in other fields might not be following their hearts. Also, just as in the natural sciences but less so, the jargon of the humanities can make it difficult to understand. Finally, students in the humanities can overwhelm debates with rhetorical moves that make claims that their field concerns what it means to be human and what truth really is.

The discussion of the humanities consists in this section of interviews with Ricky, Anita, and Isaac. Ricky describes a new relationship with a girlfriend from the other side of the disciplinary tracks, which highlights aspects of his own view of vocation; through his discussion,

he delves into the issue of economic prestige, communication, and jargon in the humanities. In discussing her relationship with literature, Anita explains the humanities seem to be the most human discipline. However, taking a constructivist turn, she also argues that science is a human discipline as well, since science is a human creation. Isaac reflects on the humanities in the age of science.

Ricky is generous in his interview in sharing thoughts about his relationship with his new girlfriend, a relationship of very different personalities that illuminates his thoughts on vocation. The relationship was approximately a month old, and he was already sensing big differences between his girlfriend and himself.

> Ricky: Even though it's been very good … there's been … some uh, inter-disciplinary stress … but also socio-economic stress because she's also affluent … it's weird that we're dating because she usually dates athletes and med students.

The relationship would end up lasting only a few more months, but he was seriously committed to it at the time. Ricky is frank in explaining that his girlfriend is planning on going to medical school, not because it is something she particularly wants to do, but because it will pay well, perhaps providing her with monetary resources for philanthropy in her spare time. He describes her attitude as, "I can look after myself and then do humanity on the side."

> I think that that perspective is more common in business and science because … you can make money in those disciplines and then … it's great that you play instruments and stuff, keep it as a hobby … it's a nice thing to do at parties, but … if you're not making a quarter-million dollars a year, you're not worth anything…. And … she's very supportive … but she doesn't hesitate to point out that some of her friends do find it strange, and my

> friends, when I say, “Yeah, she’s in DZ [a sorority] and she’s a [pre-]med student,” they’re like “Ricky? What? Ricky?”

His girlfriend’s perspective provides Ricky with a convenient contrast for describing his own attitude. Even though he does not have a clear career waiting for him after college, he has his reasons for studying in his field. He believes that what he is doing might “better humanity” and might be his best chance at “contributing and being happy.” In fact, he cannot conceive of planning his career the way his girlfriend does.

Ricky goes on to point out how his way of seeing vocations is connected to his blue-collar roots. Blue-collar workers often seem to him to be more receptive to the arts than others do. Ricky thinks they may be less concerned about making money and more concerned with following what one likes to do. He mentions a visit with a carpenter friend of his father who asks Ricky about working in the arts:

> [He said,] “I never met anybody in the arts, what do you do, how do you make money in that? I mean … I been a carpenter for 40 years, like what do you, what do you do?” … actually I find that blue-collar people are the most responsive to … what arts and what artists do and think it’s really interesting and understand that sometimes you just follow what you want to do rather than what’s financially beneficial.

This anecdote also helps Ricky to re-establish the craft aspect of his work, tying it into workmanship.

Another area where Ricky shuns elitism is in intellectual roles. In Chapter 5.2.2, Ricky claims that rocket scientists, not literary theorists, occupy the highest reaches of intellectual prestige. Here I ask which of these people is smarter, and he uses his answer to shift the discussion, critiquing the basis of this hierarchy and demonstrating one of the ways the

humanities has at hand to defend itself: by valuing clear communication and claiming that ground for its own.

> I think the issue is not who is smarter, but which one of those people can apply what they do to the rest of humanity and … that the person who can apply what they know to the world around them most effectively and communicate … those things is the smartest. So Susan Sontag beats out most nuclear scientists, but Albert Einstein beats out most literary theorists.

Ricky has subtly taken my question about intelligence and changed it to a measure that clearly favors the humanities. He has changed the standard of worth from intelligence to clarity of communication. Perhaps Ricky thinks an intelligence measure would in fact favor the rocket scientist, or maybe he does believe that clarity is more important than intelligence. It is telling that in our discussion about jargon, Ricky describes his prejudice that answers in Brackenridge presentations should strive for clarity rather than exactitude, further elucidating his valuation of communication over intelligence. I ask him what the difference is between clarity and exactitude, and he responds,

> Say you ask me a question about acting…. "What is most desirable of an actor?" and … "Emotional truth" is one answer. Another, ah, I could say "Well, someone who a- approaches a script with a a keen analytical eye and breaks it down into beats and hits in such a Stanislavskian way that they uh really find [a good] midway between the sort of older forms of acting and newer forms of acting." That's not effective for you as someone who's not in the field. But I've seen science people say, y'know, jargon, jargon, jargon, jargon, jargon, jargon, jargon, and that's not effective. And … when someone asks me a question I want to give them an answer that's useful for them. And … I'm not just saying

science people because many science people in the Brackenridge Fellowship answer with absolute clarity and many of the uh, literary and art people couldn't manage a clear answer if their life depended on it.

My long relationship with Ricky and knowledge of his background provided me with insight into his concerns. I saw his liberal education, his role as a democratic participant in Brackenridge, his blue-collar utility concerns, and his theatre commitment all line up in his arguments. Although people are more than the sum of the influences in their lives, the work of understanding their comments can be attempted through finding what traditions speak through them.

I ask him if he believes that this prejudice comes out of his academic culture of theatre studies, and he thinks that it does. "No other field has such a clear and vital relationship between the practitioner and the receiver, y'know, actor—audience." However, for Ricky, the clarity of the humanities is not homogeneous. He does not think literature has the same value of clarity:

A lot of people in writing don't … care if people get [it]: "It's my vision!" you know and "Oh, James Joyce is so much better than Chekhov because … like, it's so confusing!"

Interviewer: [laughter] Right.

Ricky: And like … "Oh, I hate Shakespeare, he's so easy!"

For Ricky, both the natural sciences and the humanities can go wrong by being too far from the public. He argues for a mystique that is made more from clarity in communication than inaccessibility. Of course, as he mentions, there are many in the arts who would disagree, but this is his aesthetic position, as formed by the influences on his life.

In her interview, Anita continues with her comments in the same vein as her comment mentioned in section 6.1.2 that "humanities is about the human." I ask Anita about her prejudices

or pre-understandings about literature, and she explains that she sees literature fitting into her personal bias

> toward life, as opposed to away from life … somehow—from a very young age—I've just chosen words and stories as something that made me want to be alive. And because of that, I just think … that I can't look at literature maybe the way someone who felt that equations were what made them want to be alive.

Pressing the issue further, I also ask if she felt that in any sense science was not something that works toward life, and she responds ambivalently.

> Science … its very nature just regards humanity as, y'know, a speck of nothing. But, yet, whenever, you are studying your environment in the world you find yourself in, you're still studying yourself because you know the world is just … whatever representation you have of it, so…as you learn about the world, you're still studying yourself in the end. So it's hard to say that the sciences are less concerned with um life, than … the humanities.

Anita's vision of academia as demonstrating aspects of humans (instead of, say, truths about the universe) recurs in Chapter 7. What is important is the way that even science can be used to glorify humanism.

In his interview, Isaac calls upon a general sense of humanism to support the humanities. He describes his thoughts in terms of intellectual history, wondering when science took on a different "aura." He says that he wonders if it has more to do with rhetoric or the work that is done by the natural sciences.

> If, I'm going under my assumption that science makes just as many assumptions as humanities does … why is there such a difference? I mean, you would think that … we're human beings and that … when my parents hear humanities work being done, they would

almost think is more important than, let's say, curing cancer 'cause they're people that … think and feel and create, and … so… it's very strange … how we look at ourselves…. Like, if you're looking at the two fields … we aren't … cancer molecules … [laughs]…. But somehow the sciences are more important … they have an air of being more important.

Isaac's simple, humanistic point leads him to the seemingly absurd implication that the project of curing cancer gets too much prestige. However, his slip between "the sciences are more important" and "they have an air of being more important" shows the strong tension between a desire to claim a prestigious place for the humanities and the realization that the humanities can never achieve visible results like curing diseases.

In the focus group, a snapshot of a conversation reveals how the link between jargon, the truth mystique, and the human subjective mystique can be employed by the humanities. Ron attempts to explain why he has a hard time fully comprehending humanities presentations and is interrupted.

Ron: Yeah, coming from the natural sciences, I find it almost impossible for me to try to raise a criticism of anything in the humanities because my … I believe that my field is looking to … okay, I'm going to bring up truth now.

[general laughter]

Ron: My. Yeah. My … I'm not afraid to go there … my field um, is *trying* to get at objective truth, and as human beings …

Luther: (Whispering) What does that mean?

Ron:…yeah, well, tru- truth … uh, aw … but I *don't* believe that, like y'know and that's something that's important to me and it's important I believe as scientists. Even if we

> *can't* because we're human beings, we should be *trying*. But it, when it's y'know in the humanities, there's not even an attempt to *go* that route. It has—it's necessarily subjective and therefore it's harder for me to try to raise any sort of criticism about it.

As mentioned above, ironically, Ron is *trying* to explain what is hard to understand, and Luther's interruption knocks him out of his question. Of course, the question of what objective truth means is no easy matter—even for philosophers, but especially for someone who thinks of himself as a scientist. This event recalls Anita's complaint about her question being derailed by science jargon and shows that it can occur in any field.

In academia, truth is traditionally considered the province of philosophers and artists. It is on this basis, claiming truth as a concept of its realm, that the humanities present the strongest challenge to the totalizing claims of the natural sciences.

7.0 THE SOCIAL SCIENCES

Chapter 7 allows deeper exploration of the Two Cultures issues in the social sciences, an academic division undergoing Two Cultures issues within its borders. This internal debate makes it an especially lively field to study in the context of this study

The organizational strategy for Chapters 5 and 6 was to first present students who speak generally positively for a disciplinary division, then some who speak critically of it, and then a focus group segment if it can further illustrate any interesting points. One of the challenging but telling organizational issues in preparing *this* chapter's observations for analysis is that it was impossible to delineate which participants would speak for the social sciences and which would speak critically about them. There was a mix of students who saw the social sciences as best modeled after the objectivity of the natural sciences and those who thought they should emulate the humanistic concerns of the humanities. Ian Allen, Andy Underwood, and Elaine Iwinski all think of themselves as doing work in the social sciences for the summer but disagree on many issues. Ian does not place himself there fully (he is planning on a career in academic mathematics or physics) and perhaps has some perspective because of that.

Just as with the natural sciences and humanities, the Fellows interviewed in this study have much to say about the social sciences. In terms of conceptual issues, the methodological debate so common in the social sciences plays out here—even sometimes within one person. In the interviews and focus group, students usually seek to pull the social sciences under the

umbrella of the natural sciences or humanities in order to give them better focus. The students propose different ways that all three major divisions could coexist. Students who see the social sciences as best modeled on the natural sciences see the qualitative tradition as weak or as giving up on what the social sciences could accomplish. Students who see the social sciences as best modeled on the humanities express concerns about the deification of science and dehumanization of people when social science is used to model human behavior. The interpretation section allows me to tease out some implications of the Gadamerian concept of conversation.

Issues concerning labor and utility focus almost entirely on the latter issue—there are no discussions of whether the labor of the social sciences is difficult or not. In terms of utility, though, the social sciences are seen perhaps the most use-focused division in academia, which makes interpreting its beliefs to others all the more critical. The use-value of the social sciences maps onto Dilthey's discussion of *Erklären* and *Verstehen* traditions: respectively, explaining and understanding.

Finally, given the fact that most students see the social sciences fitting under the natural sciences or the humanities, perhaps it is not surprising that issue of the mystique of the social science proper is not raised. However, in arguing for the proper role of the social sciences students do propose *potential* visions of the social sciences' mystique. There is not the same implication of democracy of disciplines that occurs in discussions of the natural sciences or humanities. There also are no concerns expressed that the social sciences can be jargon-laden the way that the natural sciences and humanities can be.

Overall, in terms of interpretive community, students in this study were always looking for people in a shared-value system they could relate to; in the social sciences students seem to

seek people on the same side of the quantitative/qualitative methodological debate as they currently place themselves.

Beyond academia, this conflict in the social sciences has serious ramifications for general society today. Gadamer sees the root of the methodological debate as being connected to the role of objectivity in the social sciences. He argues that in comparison, the natural sciences' focus on objectivity is actually less crucial; a person he would describe as a "true" (read: unalienated) natural scientist knows how very particular his or her realm of knowledge is and rejects the "deification" of science that the public might express. But the social sciences are more important to examine, especially when they try to be objective about *human* phenomena, because the social sciences in the contemporary era "increasingly see themselves as marked out for the purpose of scientific ordering and control of society" (1967/1976, pp. 39-41). They would seek methodological alienation from society in order to objectively analyze it, yet they are expected to live within and participate in it. It is for these reasons that Gadamer sees careful interpretive reflection on this division of academic life being crucially important.

7.1 CONCEPTUAL ISSUES

This section provides an illustration of the spectrum of epistemological and interpretive positions (and complaints) in the social sciences. The interpretation section also allows discussion of the goals of Gadamerian conversation. In both of these sections the methodological debate of the social sciences is ever-present; the methodological debate is in its entirety an example of a Two Cultures conflict.

7.1.1 Epistemology, Theoretical Perspective, and Methodology

In discussions about the social sciences, when discussions touched on epistemology, theoretical perspective, or methodology, the interview conversations engage the difficult question of whether the social sciences have a set of epistemologies, theoretical perspectives, and methodologies appropriate to them. Ian seeks a subtle combination of humanism and science, whereas Andy Underwood's and Tom Erlen's comments show the concerns of students who worry about the social sciences not being, respectively, humanistic enough or scientific enough. Moreover, the focus group shows two different views of how one might conceive of peaceful coexistence of the natural sciences and humanities perspectives. All of this goes to show several competing conceptual ways of conceiving of the social sciences.

Ian, whose work is very scientifically modeled, actually has a very nuanced view of what truth claims the social sciences can make in comparison to the natural sciences. He describes the work of the social sciences as incredibly important work of discovery, albeit with strict limitations. He argues that social systems modeling cannot provide a complete picture of the human experience. The problem is not methodology. The problem is the subject of study: people. He believes that human experiences have an element of subjectivity that is impossible to address in social models. This limitation makes the field all the more exciting to Ian.

> And that's why … social systems modeling is like a really epic quest because it's not like physics where … even if we're not there, everyone sort of hangs their hat on the idea that we'll get there some time. Um. Whereas with social systems modeling I think that's *not* an idea that you should even try to hang your hat on. You're not supposed to *get* there, you're just supposed to get closer.

The fact that humans have an "element of subjectivity" that makes them impossible to model scientifically is an important part of how Ian thinks the social sciences should view themselves. He explains in strong language the rigid limitations he sees on the social sciences:

> Any social systems modeler who tries to tell you, social systems modeling is the be-all end-all to understanding human behavior is a *liar* and they- they're a failure at what they're doing. It's just completely wrong. You need to take this stuff with a grain of salt. It's it's an *explanation*. It's our best guess.

Gadamer would probably find this description of the limited value of the social sciences heartening. It recognizes the use as well as limits of the subject, balancing attempts at prediction with humility. However, not everyone is comfortable with this balance.

One way of resolving this balance would be to subsume the social sciences under the humanities or the natural sciences. Andy would prefer to see the social sciences adopt perspectives common to the humanities, and Tom argues for applying the method and measurement common to the natural sciences.

In the discussions surrounding Andy's conflict with Ian, Andy expresses his humanist concern that using numbers in the social sciences can be misleading and dangerous: He disagrees "completely" with the idea of using math to talk about arms races. As he says, "Human suffering is unquantifiable," and putting numbers to something like an arms race gives the wrong impression that it can be quantified. He shares that during Ian's presentation, he was thinking,

> "Well maybe this is just bad, like, to do…." Like, when we think about the Iraq war and we're using numbers, like, how can we possibly do what's right because, like, the numbers don't represent anything. They're, like, they misrepresent so much. So much. So it's like, how can you even justify any answer derived by, like, calculations i- if you

apply them to a human sense? So … I wonder what the benefits are of this. Like, what is, what is good about this?

"What is good about this," of course, is the benefits arms race modeling could provide to a scholar or a nation in making decisions about participation in arms races. There is never a guarantee that only responsible leaders will benefit; military benefits might also accrue to those who would use the knowledge for their own ends. Therefore, given Andy's ethical concerns about science and technology, his humanistic perspective shows through.

From the other side, Tom expresses the concern that the social sciences are not scientific enough—that they do not contain testable rubrics. Even for projects that do not use numbers, Tom argues that rubrics (methods) are the only sure way to progress. For example, he praises Emma Rizzo's social science presentation on presidential rhetoric because it has clear guidelines; therefore, surprise was possible for her. Tom also enjoyed a comparison of the Roman Republic and a Chinese empire by Orel Andrews, where he felt that putting two such different historical political formations next to each other had a strong potential for surprising the researcher. As stated earlier, his standard of surprise is that which reassures him of the study's avoidance of subjectivity.

In the focus group, a discussion ensues about qualitative methods in the social sciences. Luther Yu takes on the responsibility of summarizing a general view of qualitative work in the social sciences. Qualitative scholars, he argues, operate under the concern that "statistics alone cannot fully capture the reality of what's going on." They believe that qualitative tools are needed to describe people's attitudes and emotions beyond statistical measures.

Ron Lutz does not see how understanding can occur in the social sciences without numbers, and he sees pessimism in Luther's explanation. Ron says to Luther that it sounds like

he is giving up on the project of understanding humans merely because of the belief that it is impossible to measure some of their important facets with numbers.

> There need to be psychologists out there that are trying to figure it out … working … from the perspective that it's possible to do so and that that will lead to … great benefits in … psychology and then maybe to economics and political science, that … there has to be people out there that are, that are working like that.

The kind of understanding Ron seeks from the social sciences is in the tradition of *Erklären* instead of *Verstehen*. He seeks *explanation* that allows for future prediction.

Both Anita Iqbal and Elaine Iwinski seem to agree with Luther but use their agreement to advance different goals. Anita advances a point of view that allows for peaceful coexistence of these two perspectives, describing both the quantitative and qualitative perspectives as being used to demonstrate the breadth of human attainment.

> Maybe [this discussion] is sort of like showing these two competing views of what's really great about humans. And the one view is, "We can do this," and the other view is "We're more than mere atoms and robots that can be figured out by these means."

These comments are problematic, and Gadamer's discussion of the problem of judging art to be a classic sheds some understanding on why they are. Making a judgment that art is classic and will endure is problematic because what makes the art seem classic is a product of a history and tradition the art viewer is only partially aware of. Qualities of greatness are part of the fabric of cultural aesthetics and sensibility. There is no non-circular definition of a classic. The art world is like an "aesthetic resonance chamber" (1966/1976b, p. 8), resonating with what seems right because of a half-hidden history.

Anita's comments have the same problem. The standards Anita brings to evaluate these forms of research are historically informed by a tradition, and this tradition is made up of the very things she is evaluating. The standards of positivism and Romantic humanism seem to form her belief of what makes humans "great." Therefore, when she sees positivism and Romantic humanism evidenced, she lauds them as evidence of attainment. Although it is refreshing to see a humanistic way of appreciating science, it is circular to use the humanities and natural sciences being praised in order to further praise humanity. It is tautological to use these views to demonstrate "what's really great about humans."

If Anita's peace plan involves using qualitative and quantitative perspectives as evidence of the glory of human development and expression, Elaine proposes the opposite solution. She argues that qualitative and quantitative research are both needed for the goal of understanding. But strangely, given Elaine's stated epistemological views, she seems say that qualitative work is another tool for social control.

> We're not saying that we can't attack [these problems] … we're saying that … it's going to take a long time 'til we can capture all the the different parts of … an economic system and be able to interrelate all of them. So … it's going to take time uh, until we get all the relations figured…. [it] takes progress … in every single discipline in order to make all the languages in order to then finally address the the giant system.

A feminist empiricist sees much positive use for scientifically applied social sciences, as long as the flaws are removed, whereas a standpoint epistemologist might be concerned with too much use value in the social sciences. I do not know if Elaine realized the frightful implications in her statement, or what the giant system was that she was referring to. However, a giant system—a

system of scientifically regulated society—represents exactly the kind of system Gadamer and other critics of too much use value in the social sciences warn of.

Anita and Elaine, though expressing hopeful thoughts about the theory of the social sciences, unintentionally demonstrate the weaknesses of their plans by giving too little attention to the traditions from which they develop. Although their plans would ostensibly allow for peaceful coexistence of the natural sciences, humanities, and social sciences, they do not address the deeper conflicts. These conflicts are evidenced strongly in the next section.

7.1.2 Interpretation

The Ian-Andy interpretive conflict, along with Ricky Limbaugh's thoughts on it, provide an arena to play out Gadamer's thoughts on conversation and dialogue. Through examining this conflict in depth, a more robust understanding of how Two Cultures discussions go wrong can be developed.

I ask Ian what he thinks about Andy's point that mathematics smoothes over the human cost of war, and he answers, "Anybody would be *lying* to you if they told you otherwise, or they'd just be very naïve about what they were doing, um so *I'm* not going to argue with that, I think that's absolutely the case." What he does disagree with is Andy's perspective on how much the "human cost" of events really affects the events of the world. Ian expresses a Realpolitik view in order to point out the limitations of Andy's perspective:

> In many ways the field of international policy is a dollars and sense game. Um. And, you know I I feel bad because I'm like using, his issue against him and he's not even here, but like let's look at the crisis in Darfur: *plenty* of pictures and feelings coming out of there.

> *No* monetary incentive and there's just no rational justification for why our country needs to become embroiled in the genocide in Darfur.

Ian does not just disagree with Andy's answer to the question—he also disagrees with the basis of the question.

Ian provides an imaginary counter-example to illustrate what frustrates him. "When it comes to something as qualitative as, uh, [snide voice] 'pictures and and feelings,' … I don't know how they could think that I'm supposed to have a reasonable response to that." Again, as mentioned in Chapter 5.2.2, Ian is pluralizing his questioner, making him stand for a humanities culture. "I mean … imagine the tables being turned and like, him being up there, and me being like, "You talked a lot about pictures and feelings today, Andy. What about the cold, hard facts?" Ian complains that he had just spent an hour talking about mathematical models and he received a question that completely ignored that fact. Before ending this part of the discussion, I ask Ian what he thinks Andy was trying to figure out. He does not think Andy was trying to figure out anything—he feels that Andy was just trying to make a point.

As mentioned earlier, in our interview, Andy states that he disagrees with the very idea of using math to talk about arms races. He goes on to invoke hard-hitting historical examples of the Nazi Holocaust and the Khmer Rouge in Cambodia to make his point, making both a personal point (in view of his Jewish heritage) and a humanistic one.

> Andy: So, um … Hannah Arendt's book, "The Banality of Evil" … when Eichmann's on the stand um, talking about like, what he did … every day when he went into work, you know he he moved little, little cards across Germany filled with people and thought nothing of it. It was just, like, a number game. 'Cause like, how can we best move these numbers in such a way that will give us a number that we like? … in Cambodia, you have

> X number of people to feed, it doesn't work in this capitalist system. Like … some people have stuff, others have nothing, so … how can we, like, move these numbers of people in such a way to maximize a number that they create? So I just feel like anytime you like, dehumanize people using, like, numbers … it's an easier way to understand something, sure. But in making it easier to understand, it just makes it … easier to, to do whatever you want with the numbers.… I don't ever wanna have a tattoo because during the Holocaust, people were just numbers.

Andy is concerned that mathematical calculations will never get humans to the point where they will decide that demilitarizing would be the right thing to do. As Gadamer (1969/1976) explains, "Science as such will never prevent us from doing anything we are able to do" (p. 196). In other words, the natural sciences will not in themselves provide guidance for what should or should not be done with the natural sciences.

I ask Andy what his feelings were during Ian's presentation, and he reiterates his thoughts on the negative consequences of using numbers to stand for people. This is ironic because he is stating his thoughts instead of his feelings, and he had just criticized Ian for being unfeeling and cold in *his* calculations. This was a phenomenon I observed several times with Andy—he shares his thoughts instead of feelings and tries to avoid placing blame on Ian.

In order to get back to the issue, I ask him again about his feelings, and he says he was frustrated. In describing his frustration, though, he does not say that he is frustrated with Ian or even with the presentation. He is frustrated "that the world is based on, like, these equations and not on … any real representation of what war is and what it does." Perhaps Andy did not want to blame Ian in front of me, but again Andy is avoiding directly attaching his feelings to Ian. It is

possible that the pull of the Brackenridge community contributes to his feeling that he should not disrespect Ian.

Gadamerian hermeneutics would certainly be sympathetic to Andy's concerns about dehumanization in the social sciences. However, it is also true that Andy's questions did not seem to open *him* up to change, either. Andy's questions (especially on, but not limited to, the day of Ian's presentation) usually triggered eye-rolls and groans. I would not argue that audience dismay is a good measure of the educational worth of a question; after all, as Gadamer says, "A person skilled in the 'art' of questioning is a person who can prevent questions from being suppressed by the dominant opinion." However, as Gadamer continues, "It is not the art of arguing … but the art of thinking" (2006, p. 361). It is about *really* considering the other person's opinion, in search of laying open the subject of study to both participants.

Can the same kind of event occur in a manner that *is* educational and opens up the subject of study? My conversation with Ricky delves into the matter of how Andy's questions are not the kind of authentic conversation that Gadamer says allows truth to happen. Grandstanding might seem like a simple tactic, but it sometimes is criticized for the wrong reasons.

Ricky comments that during Brackenridge this summer he sees people he otherwise admires making statements or asking difficult questions in order to advance their own agendas. He thinks people blame Andy Underwood because Andy speaks so often, but Ricky says others ask questions like this as well. Even though these questions are stated as if the questioner wants to understand, Ricky explains, their questions are discussion-ending. The hidden meanings of their questions are, "'How does this relate to my project?', 'How does this relate to my worldview?', or even, 'Yeah, but what about the fact that I think you're wrong!'" Ricky thinks these kinds of questions are not acceptable at Brackenridge presentations: In his eyes, people can

ask about how ideas work or ask the presenters to address flaws, but "a broad condemnation of a field is not helpful, and I saw that a lot." I certainly understood Ricky's concern that some questions were went too deep, and some were just statements in disguise; however, in my mind one of the goals of an interdisciplinary fellowship would be to encourage debates about fundamental issues. I ask him if it is the case that in an interdisciplinary forum, participants should take disciplines on their own terms.

> Ricky: You can question the fundamentals of a discipline if it's to better understand that discipline and to engage yourself in the project. But, if your question is just to shut down the discipline or to disengage yourself from the discipline … or you're making a statement, then that's not effective. And it's one thing to say … "Well why why in theatre do you do this?" Well, I'll tell you why we do it. But to say, "This is wrong that you do this in theatre because in political science we do this this way!" … is negative.

"To better understand" is a critical phrase in this quotation for a Gadamerian analysis. It is not a matter of determining and certifying authorial intent of questioners. It is a matter of addressing the fact that if a question is a statement in disguise, understanding that question is still accomplished by imagining a question that it, in turn, answers. As Gadamer explains,

> Nothing that is said has its truth simply in itself, but refers instead backward and forward to what is unsaid. Every assertion is motivated, that is, one can sensibly ask of everything that is said, "Why do you say that?" And only when what is not said is understood along with what is said is an assertion understandable. (1966/1976a, p.67)

Cloaking an assertion and making it look like a question does not allow it to escape from Gadamer's model of understanding and conversation. As mentioned in Chapter 2, for Gadamer, true conversation is something that is not forced by one side or the other; true conversation goes

beyond the wills of the speakers. It is like a game in that participants in a game enter into something with its own logic that includes them but extends beyond them and will develop in an indeterminate way. It involves "ecstatic self-forgetting" and "an elevation above oneself" (1962/1976, p. 55). This is not a recipe or a method, for the same reason the development of a game cannot be pre-planned. Experience with *Erfahrung* truth is something that agendas cannot outflank or repress.

7.2 PRODUCTION

This section consists of analyses of views of utility and mystique. The social sciences are seen as the disciplinary division *most* focused on utility. In the mystique section, one thing that is different about the social sciences is that there is no discussion of lack of clarity in this disciplinary division: Jargon is a problem only complained about in this study in the natural sciences and humanities.

7.2.1 Labor and Utility

In this section, discussions of labor and utility in the social sciences are focused almost entirely on the latter issue. There are almost no comments about how social science work is done or if it is considered difficult. However, in discussions of utility, this is the first time that the social sciences are seen as distinctive. It is not surprising that the social sciences are assumed to be of greater use value than the humanities. However, in the interviews and focus group the social sciences are seen as even more focused on utility than the *natural sciences*, since the idea of pure

research is considered valid in the natural sciences. This makes the social sciences the most focused on utility out of the three disciplinary divisions. The interview with Elaine Iwinski and the focus group demonstrate the powerful force of the need for usability in the social sciences.

Before research can be used, one crucial thing must happen: The results must be believed by those who can effect change. This seems to be the dilemma that causes Elaine some ambivalence about how to make her research usable, given that empirical data is often considered more convincing. As Patton (2002) describes, methodological decisions in qualitative research are difficult in a research tradition "where the criteria for judging quality may be poorly understood or in dispute" (p. 12), and Elaine's problem evinces this difficulty. If a scholar is in the qualitative tradition, he or she believes that at least some issues are better addressed using qualitative methods. So if the goal is effecting change, does a qualitative researcher abandon her methodology if she thinks quantitative data will be more convincing? The conversation that I have with Elaine about her project illuminates this conflict between these perspectives within her.

Elaine was trying to see if focusing the efforts of activists on the plight of women in the genocides in Darfur and Rwanda could make anti-genocide activism more effective. She would either be looking at activist groups outside of those countries or Non-Governmental Organizations (NGOs).

Elaine mentions looking for a "causal link" between activism and social change, so I ask if she feels that she *needs* to find one. She says that she would rather not, but she might need to do so in order to have the kind of effect she desires. She says that it would be her preference "to just be able to … a-assert or prove through personal experience that … my work in STAND or FORGE *does* … have an effect on those countries, but [I] feel like academically that's not really

… accepted." This view demonstrates a tension between her apparent adoption of standpoint epistemology (she would prefer to be able to prove through assertion) and her belief that feminist empiricism would do more to convince others and lead to change.

To illustrate her point about assertions being unconvincing, she mentions Andy Underwood, who has political concerns that are similar to hers. She had heard Brackenridge Fellows over the course of the semester complaining about his project, questioning the "academic worth" of his implication that he might be able to find a solution to genocide, but without empirical justification. I ask if, outside of the pressure she feels from the Brackenridge community, she brings pressure to herself as well: Does *she* have her own goal of finding proof?

> Elaine: Yeah, I would say that's almost like a long-term kind of life-goal, to be able to prove that … student groups or … activist groups … that put on … fundraising or marches, uh, concerts, awareness, all of that—that that does affect something, somewhere … but I don't think I could prove that this summer or even in an undergraduate career. But … maybe at some point down the line, yeah, I'd like to prove that.

Elaine is either moving to a position of feminist empiricism, is perceiving a need to have empirical evidence to convince others, or is pulled by both of these forces. It is her understanding that to accomplish the aims she wants, she will need to convince others, and the most convincing way she sees is through empirical proof.

So is her consideration of empirical proof a tactical move, or does she believe in it at some level? In order to understand her position better, I ask what a proof would look like in the social sciences, and she again invokes her view of the social phenomenon of proof. However, at the end of her answer she starts sliding back into empiricism.

> Elaine: *I'm* fine with kind of the qualitative, um, proof where … you're talking to people and getting really in-depth on on … people's opinions. So … if I were to … for [my] research go and interview … women in Darfur, women in Rwanda and then interview aid groups that were working with those women and … if these aid groups are telling me, "Yes, we've been very influenced" or … "very aware of the, what's going on back in the United States … with the recent march in D.C.," or something like that … then there's a link there. Um, especially if it's … repeatedly said.

Elaine immediately recognizes that this statement put her back into an empiricist mode, but she quickly gets back out of it again.

> I guess that gets a little bit more into quantitative but if it's said by several you know NGOs or individuals then certainly I would think that that would be enough to prove it as much as … dropping something on the ground ten times is enough to prove gravity or whatever.

Elaine is expressing a disdain for scientific proof even though she is aware of the respect that it garners. It never becomes clear how tactical her acceptance of empiricism is, given the way her positions slide back and forth. The conflict going on within her is also expressed in the focus group.

The focus group provides further emphasis on the idea that all social science research should be able to be put to use. This discussion recalls C. Wright Mills' (1959) description of the mockery of sociological research that amounts to "counting outhouses" (p. 74): Unlike the concept of pure research in the natural sciences, there is no equivalent similar idea concerning research practice in the social sciences.

Anita, like Ian during his interview, positions the social sciences at the extreme pole of utility:

> I think in the social sciences there's um, there's more of like this definite ultimate goal that … maybe as a result you could like make life for humans better somehow. Whereas in science, you don't actually need to say that that's the goal because there's the whole idea of pure science where you're just studying things, um just to know the truth about them, and … in the arts, there's not necessarily—some people would say there's like a social imperative in the arts, but not everyone agrees with that.

Neither the natural sciences nor the arts, for Anita, have the sense of required utility present in the social sciences.

I ask if there are generalizations that the group can make about the concept of research in the social sciences in the same way the group did about the natural sciences and the humanities. In a comment that recalls his grounding in the natural sciences, Ron brings up the idea of prediction of future phenomena:

> As … natural scientists that's what we're all about … we want to come up with something that allows us to predict what happens in the future. And I don't think that … necessarily there's anything in the humanities that really fits into that idea, but in the social sciences … we have … in economics they're trying to predict how an economy will work, in political science, trying to predict how … people will behave in a given situation—politically.

Elaine raises the topic of projects that are analysis of history; some are done to predict the future, but some are just meant to understand the past. Ron says he is glad Elaine brought up history because his conception of the field is that the reason for studying it is to prevent future mistakes.

Ron: I mean, that's my limited view of history … not very scholarly.

Elaine: I mean, that's what I would want to say that it is, but I don't think that it necessarily is.

Again, Elaine is pulled between a scientific view of usable history and history-for-understanding, between *Erklären* and *Verstehen*. Anita comments on Ron's idea, calling it "a scientific view of history," and Ron is quick to back off.

Ron: I guess that's all I've got.

Anita: I guess it depends on whether you're trying to predict the future or understand what's going on right now.

Ron: Mmm hmm.

Elaine: Or understand what went on in the past….

Anita: Which is part of understanding what's now.

Wittingly or not, Anita's throwaway comment actually raises an important view of history. By way of Nietzsche, Gadamer's view of the study of history is that it tells scholars more about contemporary culture than about the culture they are ostensibly studying. The way a scholar can make sense of history is because of the scholar's position in the future, in a context and tradition he or she is only partly aware of. "History is only present to us in light of our futurity" (1966/1976b, p. 9), which is why prejudices, more than judgments, constitute the individual.

7.2.2 Mystique: Prestige, Jargon, and Reception

Discussions of prestige, jargon, and reception that occur in the natural sciences and humanities conversations do not occur in the same way in the social science conversations. There are no concerns voiced here about prestige or problems with jargon. Again, this lack may be telling.

Jobs are certainly available but not as prestigious in jobs obtained with social science backgrounds. It is an area for future study to consider whether there an assumption of clarity in the social sciences.

The most telling remarks about how qualitative and quantitative research play into the mystique of the social sciences come during the focus group, in a heated argument about how the work of the social sciences is to be conducted and received. Tom has strong opinions on the problem with this field, just as he does with the humanities. For the social sciences, which have such a greater possibility for utility, qualitative perspectives are not just a waste of time—he actually likens them to academic sins. For Tom, the following argument pits progress against equivocation; for those who defend qualitative work like Elaine, it is a battle between hubris and legitimacy.

> Tom: In the social sciences because you have … I'm going to use a great word from the Byzantine Catholic Church—"acedia" … I just remember this one sermon … the seven deadly sins of the Roman Church are added to an eighth in the Byzantine rite of the Catholic Church, and acedia is kind of … this melancholy and this almost desire that good things are boring and we should be bad because it's exciting.… I'm gonna just put it out there: I think the social sciences would just be pure sciences if it weren't for the fact that you have a lack of control.… and I think the people who are melancholic are those who … say, "[huff] We can't ignore certain variables 'cause they … could mess everything up!" I think … they finally realized they have to grow up and deal with complex systems, like physics has for 200 years.

As usual after one of Tom's rants, there is laughter as well as some tension. I could see some students, but especially Elaine, getting agitated and wanting to speak. However, Tom is not

finished. He wants to advocate further for the social scientists who are optimistic and use quantitative methodologies:

> There are those who are like, "Wait, we *can* approach complex systems, we *can* try this" … the only reason why we had to study surprises in economics is because there are factors that don't appreciate, like, a billion Chinese people entering the free market, and *that's* why things don't go as the way you expect. But … if that weren't the case, everything would go as we expect, and there are those who are like, "Yeah, we *can* do that, we *can* get some kind of like, better interpretation," and then there are those who are like, "Man, I just, I can't *handle* a billion Chinese people: … there's no truth." Large hand-waving motion and, like, giving up

So for Tom, the social models are just not good enough yet, but they will be. However, he sees adoption of a qualitative attitude as giving up.

After Tom's comments, there is more laughter, and several people try to respond at the same time to his criticism of qualitative scholars as relativists. Elaine is the first to be able to be heard.

> Elaine: I think for the record, I was extremely restless during that entire rant and rave by [background chatter] Tom….
>
> Interviewer: Let's give our Byzantine sinner a chance to uh, escape damnation.
>
> [Laughter]
>
> Elaine: … what … I got out of that was … when when we start worrying about all these different theories and … ideas that could impact our results … then suddenly we stop doing anything…? All they're doing is … acknowledging these are factors that could mess with these results, but they're still coming up with the theory and … I don't think

> that that means that … interpretations that are less scientific, uh, are are any less conclusive.

Once again, Elaine's verbal missteps belie a serious conflict. She defends qualitative work, saying that it is not less scientific—and then corrects herself to say it is not less conclusive. Again, it is not clear if she is speaking about what is more convincing to the public or to herself.

Anita puts an entertaining philosophical spin on Tom's rant, saying, "I think that he's also assuming … too quickly that the statement that there is no truth is pessimistic." The group laughs at this comment, which provides a much-needed break from the tension that Tom has added. In addition though, although she is being funny, Anita also scores some rhetorical points for the humanities. Since she speaks for the humanities, she is free to use or discard the concept of truth without undercutting her position.

Ricky and even Ron stand up for qualitative work social sciences, arguing that it is both difficult and valid.

> Ricky: I know that physics is soooo complex … but … economists, when you talk about … who's going to buy what … what people think is cool, and you're not like, "What do atoms think are cool?" Or … "How do atoms *feel* about this form of government?" And … "Do they feel oppressed by the experiment that I'm putting on right now?" I think that that is, I dare say, *more* complex than any natural science I can think of.
>
> Ron: Yeah, I y'know I have to agree with him, I think you're being a little hard on … these fields.

Elaine has gained some defenders, and she presses her advantage. She tries to hold the social sciences up to the standard of the natural sciences and show how quantitative research in the social sciences actually might be impossible. She wonders aloud why the patterns being sought

in the social sciences necessarily have to be mathematical; from what she has seen, large sample sizes are needed in order to make valid predictions.

It becomes evident that she has pressed too far, and her newfound support soon evaporates. In the last segment of the discussion, apparently Ricky and Ron want to defend the value of qualitative research but are uncomfortable with her criticism of quantitative research. First, though, Tom responds that those who he sees as optimistic and successful social scientists approach these problems with the attitude,

> "Well, you know what? … looking at only a few things, I can derive a pattern about the whole, and say there are things that I can get rid of." Whereas I think there are those in the social sciences who are … like, "Oh, you can't prove anything."
>
> Ron: I agree….
>
> [laughter, mumbling]
>
> Luther: Please don't agree, Ron!
>
> Ron: I agree with Tom!
>
> Ricky: I kinda do too!
>
> [laughing, talking, Elaine is trying to talk]
>
> Interviewer: Okay, one person at a time. Let, let the record show that this side of the table [Tom, Ron, and Ricky] is slapping hands.
>
> [Laughter]
>
> Ron: That would be the [unintelligible].
>
> Interviewer: Yeah. Ron, Ricky, and Tom.
>
> Elaine: Okay.
>
> [Long pause as everyone waits for her to speak.]

Elaine: No.

[General laughter]

Luther: Hear, hear.

[More laughter]

The rest of the conversation consists of people digging into their positions even more, with Luther summarizing for everyone yet again. Again, the Two Cultures conflict has turned the conversation away from learning, although this time the group is able to laugh and enjoy it. The proposed mystique of the quantitative or qualitative models of the social sciences remains in tension, pulled on both sides by the methodological debate and by the traditions of the two disciplinary divisions that inform it.

8.0 CONCLUSIONS

8.1 SUMMARY

Gadamerian hermeneutic phenomenology is a methodology that does not put the natural sciences and the humanities on the same level; seen in the context of this methodology, both are viewed through a tradition informed by the humanities. However, the methodology does provide a fruitful perspective for illuminating the Two Cultures conflict in Brackenridge. If the interdisciplinary Brackenridge Fellowship has parallels to the educative goals of liberal education, this study also has implications for larger issues in higher education.

The Two Cultures phenomenon is not an isolated aberration; it is fundamental to any community that combines the natural sciences and humanities today. It is as much a sign of democratic liberal education going wrong as much as it is a sign of the natural sciences and the humanities communities going right. If it is true that students generally consider the outlook of the natural sciences objective and the humanities subjective, then they *should* conflict with each other. However, as I have noted, these perceptions are overgeneralized at best and harmfully false at worst.

As they progress through their studies, students choose disciplines in which they can participate. These students become, at least partially, community members in these disciplines and these interpretive communities. These disciplinary divisions define themselves partly by

their opposition to each other's worldviews. They protect their community members by demarcating their boundaries and defending their views against those whom they see as outsiders. Although students are under pressure from the structure of liberal education to consider all disciplines equal, there is more to gain by defending academic disciplines than from trying to find common ground. Educators interested in addressing this issue would need to emphasize the communal nature of objectivity and subjectivity; however, they will be pulling against the gravity of disciplinary communities. By educating about the roots of these fields (possibly through invoking Two Cultures conflicts), communities of truth, in the sense of *Erfahrung*, can develop.

Every Two Cultures event is different, but these events seem to occur in the same perceived settings. Following are some findings about the contemporary academic context in which Two Cultures conflicts are realized.

- Students who advance into a major or research project start to identify with an academic community. However, they also are in a university setting, where there is a pressure to accept the legitimacy of other intellectual disciplines. Students experience attractions toward both their intellectual communities and toward a larger community of learners. These pulls normally can work in the same direction; it is only when a threat is perceived from another academic discipline that these pulls conflict with each other.
- The modern academic research tradition is one in which objectivity and utility are viewed as the standard for scientific research; moreover, this standard has often comes to be applied across disciplines, making the humanities suffer by comparison.

- The modern humanities research tradition is believed by many to be subjective. This perception almost always works against the humanities.
- There is a perception of an expected knowledge gap between the natural sciences and the humanities; the perception is that people usually know more (and are expected to know more) about the humanities than the natural and applied sciences. Both fields can and do use this perception to their advantage.

This set of observations describes much of higher education today. However, Two Cultures arguments do not occur very often. Instead, they require an interdisciplinary setting where student beliefs can contrast with one other.

The trigger for a Two Cultures event seems to be a speaker stating a demonstrative proposition—a statement that is supposed to stand alone. This statement can be a sentence or an entire methodological perspective. The listener, drawing on a different intellectual community than the speaker, tries to understand in the Gadamerian sense and imagine a question that the proposition answers. This question is not the one the speaker is trying to answer, so when they actually speak to each other, a hermeneutic conflict occurs.

When the listener asks a question to make a point, he or she is really making a statement (another demonstrative proposition) dressed up like a question. As things devolve, both speaker and listener start throwing out demonstrative propositions, listening to each other less and less, invoking warrants that only would convince someone who already agrees with them.

This is not what Gadamer would call a true conversation: The speaker and the listener are beyond the reach of the truth accessible in a real conversation. The students who I saw as usually most open to conversation and learning were Ian, Luther, and Ricky. They were three students who in my view made the most sincere attempts to engage their understandings in a hermeneutic

fashion. They commonly framed their understandings in terms of their pre-understandings, without being asked to do so. Significantly, all saw themselves as straddling academic communities, even though Ian and Ricky had strong potential careers in mathematics and in the arts, respectively. All three were uncomfortable being pegged into specific academic communities, and it may have been this loose connection to their interpretive communities that made it easier for them to listen to others.

Two Cultures arguments tend to generally attack perceived weak points in the other discipline; for example, the perceived subjectivity of the humanities or the lack of philosophical savvy in the natural sciences. These arguments also invoke rhetorical strengths from their own disciplinary divisions (for example, using the language of objectivity in the natural sciences or claiming literature as the field where what it means to be human is explored for the humanities).

However, these conflicts serve an important function for students, which cannot be discounted. Fighting for a discipline helps reassure students of their academic communities; by defending their adoptive disciplines, they reinscribe their membership therein. Students spoke up for their own disciplines even when they had their own personal concerns about those disciplines. Students were always looking for people in a shared-value system they could relate to, and so they looked for characteristics in others that they thought marked them as like minds. In the natural sciences, students often looked for others who valued objectivity. In the humanities, they often sought humanism and individual enjoyment of projects. In the social sciences students seemed to seek people on the same side of the quantitative/qualitative methodological debate as they were.

Finally, the Two Cultures phenomenon in the social sciences is known to people in that intellectual community as the methodological dispute. It is as fundamental to this field as the

traditions that make up the natural sciences and humanities. Given the way that the social sciences are always already in a Two Cultures conflict, it is this disciplinary division, combined with insights from the humanities, that can best illuminate the Two Cultures phenomenon.

This model applies equally well to interdisciplinary conflicts like the Sokal Hoax or the recent debate between historian of religion Karen Armstrong and scientist Richard Dawkins (2009) about religion and evolution. When people are trying to answer different questions, it matters little how intelligent they are. They will talk past each other if they are on different hermeneutic wavelengths.

Two Cultures events are teachable moments that go to the heart of the educational project: helping students to both learn about the world *and* to see the basis of their learning. As Ricky Limbaugh says in the focus group,

> The interesting thing about the Brackenridge … or any interdisciplinary work—is that it enriches everyone involved and like we are sitting here having this discussion … which could, y'know, spawn maybe like some set of criticism, or some piece of art, or some like social scientist idea about, you know … I can't speculate … but it could spawn something, and [if it] spawns a conversation, and it spawns some sort of … academic fellowship that I think is unique to this sort of community.

Two Cultures phenomena in interdisciplinary communities are indeed a unique and priceless chance for learning and growth.

8.2 IMPLICATIONS

There are conceptual and practical implications of this study. The first conceptual implication concerns truth and understanding. As Madison explains, “The goal of philosophical hermeneutics is philosophical—that is, to understand what is involved in the process of understanding itself” (as cited in Schwandt, 2003, p. 304). This may sound like mirrors facing each other, but the point is that any hermeneutic study is not just about understanding the nominal topic of study; it is also about trying to understand how that understanding can come about. Gadamerian understanding (imagining a question that can be answered by the topic of study) provides an unorthodox model for conceiving knowledge and being that provides justification for qualitative modes of understanding.

If Gadamer is right about understanding, his concept also leads to important ramifications for the concept of academic (and human) identity. Development of identity comes in the context of communities, in the flux of feelings and thoughts that cause one to join, oppose, or act to change the traditions of those communities. For Gadamer, understanding oneself would be seeing identity as an answer to a question, and so imagining that question is crucial. Understanding oneself in an intellectual community could be imagining self-concept as an answer to the question, “What are you like?” In an interdisciplinary community, when one is faced with other intellectual communities, the other question that is invoked is, “What are you *not* like?” Development of identity also occurs through having counter-examples, communities that serve as markers to identify what is foreign. Therefore, if identities are being formed in the context of perceptions about others, it is important to examine the validity of those perceptions and see where they come from. This result points again to the importance of a deep and critical understanding of the way the different academic disciplines operate.

There are clear practical implications from this study for the Brackenridge Fellowship, for liberal education, and for academia more generally. For the Brackenridge Fellowship, this study will be shared with the program directors. A primary recommendation is to address directly with Fellows the democracy of disciplines implied by the structure and funding of the program. If the directors believe all disciplines are equal on some basis, that basis should be explicated. If there are senses in which they are not equal, those also should be addressed. The directors may not even agree with each other about the details of these comparisons. Positions on this issue could provide an engaging discussion or debate and a teachable moment for the Brackenridge community. In addition, though, this conversation would likely invoke Two Cultures arguments, so the directors would need to be prepared for them.

For liberal education, colleges and universities should consider general education programming beyond the traditional requisite of requiring several courses in different subject areas. The goal of general education requirements has always been to expose students to multiple subjects and ways of thinking. However, without an examination of how some of these ideas are perceived as conflicting with each other and an interrogation of the implications of general education requirements, a teachable moment is missed. A seminar or workshop on interdisciplinary issues could cap general education, helping it to fulfill the goals of liberal education by interrogating the relationships among disciplines in liberal education.

The structure of this interrogation would contextualize the roots of academic disciplines in terms of their history, traditions, and contemporary communities. Two Cultures events can be instigated and interrogated for heuristic value, to see what questions the demonstrative propositions of different disciplines can be imagined to answer. Any seminar of this sort, built on a Gadamerian basis, would have to place its interpretive stance up front, providing as much

awareness as possible of the tradition and community informing its operation. If it is truly Gadamerian, it will be open to critique and to meeting the horizons of other ways of conceptualizing the issue, other ways of demonstrating consilience or incommensurability.

In academia, faculty members are not generally recognized for their work across disciplines; usually their records within disciplines are what matters for tenure and promotion decisions (Lattuca, 2001, p. 38). If institutions are serious about encouraging undergraduates to engage with liberal education instead of fulfill menu choices, these institutions should consider what kind of example encouraging faculty to stay narrowly within their disciplines provides for their undergraduates. Groups like the Harvard Society of Fellows and the Edge Foundation that encourage cross-disciplinary outreach and argument, and developing interdisciplinary programs, can provide locations for this kind of work. Considering interdisciplinary work as valuable in tenure and promotion decisions would encourage faculty to engage across disciplines.

8.3 SUGGESTIONS FOR FUTURE RESEARCH

Another population to examine the Two Cultures conflict in is academic faculty. Occasionally Brackenridge Fellows doing interdisciplinary projects have research mentors from different academic fields, and conversations in these committees could provide insight into the issue. Meetings of these committees could be observed, and interviews and focus groups could be performed with this population.

In addition, the project of a workshop, seminar, or course that examines intellectual history, tradition, and community is no small task. Among the challenges for an institution convinced of its value would be deciding when to offer (or require) such a module. This will

require research to explore what benefits it could provide and what difficulties would ensue at different points in a student's education. For example, offering a program during a freshman year would be easiest, given the flourishing of freshman programs today, and it could be helpful for freshmen to have these issues in mind before setting out on a course of study. However, it is not clear that students have developed enough of an understanding of or engagement with any academic culture at this early point in their academic careers to have much to bring to a discussion. On the other side, students who are entering their senior year have largely declared majors and are considering what comes after their undergraduate education. Pressure from major departments and from students anxious to fulfill graduation requirements could make a senior seminar problematic as well.

8.4 LIMITATIONS

In order to be consistent with Gadamerian philosophy, I see the limitations of this study not only as flaws, constraints, or shortcomings, but also as what allows meaning to take place at all. This is not a way of avoiding responsibility for what might have been done in a better way; instead, I claim this responsibility and see what meanings emerged within my imperfect, contextualized, circumscribed project.

If all understanding is self-understanding, the primary limitation of this project is the fact that it is conducted by me, a single human being, albeit a human informed by various research traditions. My perspective is as unique as the combination of academic and ethical influences that inform it, and any project that is ostensibly outward-looking is also inward-looking.

Gadamer defines truth first by its limitations, and so limitation is the key to his model. However, this view of truth is at cross-purposes with much of the Western analytic tradition as well as the natural sciences, which both see truth as a means of addressing objective reality. Any Gadamerian approach to this topic must be clear from the beginning about how different it is from these traditions. In addition, this methodology sets up hermeneutics as the framework within which all else can be understood; to this extent, hermeneutics is not a democratic perspective, allowing all disciplines to speak on the same level.

Another limitation is that the students in the Brackenridge Fellowship are advanced, motivated, and intelligent; they are selected through a competitive process that considers not only their academic achievements, but also their apparent interest in participating in an interdisciplinary community. They are not representative of most students in higher education today, and so any implications from this population may only be applicable to special populations instead of more general student populations.

In addition, I must ask myself if I can ethically provoke Two Cultures conflicts and ask others to do the same. As conflicts at Brackenridge and other Two Cultures conflicts demonstrate, even the best-intentioned and most intelligent scholars disengage from true conversation when faced with these conflicts. Given the comfort provided by research traditions, is it good to demonstrate how these traditions are historically contingent and influenced by more than pure pursuits of truth? Some students see an academic major as an important part of their identity. Is it harmful to show how historically contingent these traditions are? Gadamer (2006) actually believes suffering can be educative. He refers to Aeschylus' comments on "learning through suffering" to explain his point:

> This phrase does not mean only that we become wise through suffering and that our knowledge of things must first be corrected through deception and undeception…. But Aeschylus means more than this. He refers to the reason why this is so. What a man has to learn through suffering is not this or that particular thing, but insight into the limitations of humanity. (p. 351)

Seeing one's community described as a historically contingent creation can be unpleasant. However, if a course presents society and history as the first bases upon which other ideas are built, if done with care, this kind of suffering can be what the educational process, conceived as *Bildung*, is all about: developing, flourishing, and learning limitations.

As mentioned in Section 2.5.5, one of the surprises in this project was the fact that the students in the focus group, on their own, decided to go out for coffee afterwards. It was a spontaneous decision that I neither encouraged nor discouraged: I went along to see what would happen with this group of smart, outgoing, interesting students who in other circumstances would never choose to spend time together. Luther mentioned, as we were walking out of the interview room, that this had been the most intellectual discussion he had had all semester. Perhaps everyone wanted to keep going the discussion going, or perhaps they felt obligated to the community that they had just formed. In any case, we got to the coffee shop, ordered our drinks, and sat together. I sat back and waited to see what would happen.

The discussion was, in a word, boring. Perhaps they all had used up their wit, but the discussion was forced. As we sat together, the students seemed to be waking from a spell, starting to wonder why they had all chosen to come out together. As I thought about that awkward time at the coffee shop afterward, I wondered what we had achieved in the focus group

that made the group want to go out together. My search had begun as a search for consilience, and it had ended up in a small focus group, a small new community. Without the conversation topics and even the arguments to bind them together, the community dissolved. Perhaps the consilience I had sought was embodied in that focus group community: not a framework to contain all knowledge, but a dynamic, dialogical, contentious bundle of perspectives.

My six characters were in search of an author, but I am not that author. The author they sought was truth—something outside of themselves to give them growth: transcendence of the self as well as knowledge of limitations. More Two Cultures experiences could be just the thing.

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

University of Pittsburgh
Institutional Review Board

3500 Fifth Avenue
Ground Level
Pittsburgh, PA 15213
(412) 383-1480
(412) 383-1508 (fax)
http://www.irb.pitt.edu

Memorandum

To: MICHAEL GIAZZONI

From: CHRISTOPHER RYAN PhD, Vice Chair

Date: 3/28/2007

IRB#: PRO07020035

Subject: A Hermeneutic Investigation of "Two-Cultures" Phenomena, and Its Implications for Liberal Education

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Your research study has received expedited review and approval from the Institutional Review Board under 45 CFR 110.(7) characteristics/behaviors.

Please note the following information:

Approval Date: 3/26/2007
Expiration Date: 3/25/2008

Please note that it is the investigator's responsibility to report to the IRB any unanticipated problems involving risks to subjects or others [see 45 CFR 46.103(b)(5) and 21 CFR 56.108(b)]. The IRB Reference Manual (Chapter 3, Section 3.3) describes the reporting requirements for unanticipated problems which include, but are not limited to, adverse events. If you have any questions about this process, please contact the Adverse Events Coordinator at 412-383-1480.

The protocol and consent forms, along with a brief progress report must be resubmitted at least **one month** prior to the renewal date noted above as required by FWA00006790 (University of Pittsburgh), FWA00006735 (University of Pittsburgh Medical Center), FWA00000600 (Children's Hospital of Pittsburgh), FWA00003567 (Magee-Womens Health Corporation), FWA00003338 (University of Pittsburgh Medical Center Cancer Institute).

Please be advised that your research study may be audited periodically by the University of Pittsburgh Research Conduct and Compliance Office.

APPENDIX B

FIRST-DAY INTRODUCTION SCRIPT

AND IN-PERSON REQUEST FOR PARTICIPATION

I requested and received time to read the **First-Day Introduction Script** on the first day of the Brackenridge Fellowship:

Hello, my name is Mike Giazzoni, and I am a graduate student in the School of Education here at the University of Pittsburgh, and I am conducting a research study as part of my doctoral dissertation this summer. I am also an Academic Advisor in the Honors College, which sponsors the Brackenridge Fellowship. The directors of Brackenridge have kindly given me permission to ask student members of the Brackenridge Fellowship to be in my study. The title of my study is "A Hermeneutic Investigation of 'Two-Cultures' Phenomena, and Its Implication for Liberal Education." Hermeneutics is the study of interpretation, and I am interested in interpretive issues related to students in different academic disciplines.

I will be asking a small number of students, eight to twelve, to participate in my study at some point this summer. Your participation in this study would be completely voluntary. You may refuse to take part in it, or you may stop participating at any time, even after starting your participation. Your decision, either way, would never affect your relationship with your

Brackenridge Fellowship or the University of Pittsburgh. Only my advisor and I will know of your participation and your identity.

I'll invite individuals to participate based upon how well their participation in the Brackenridge Fellowship provides me with a broad, diverse sample. I will make this determination based on observing your performance during presentations of Brackenridge Fellows.

Your participation would consist of an approximately 1-hour interview, a possible focus group with other students, and follow-up interviews. The time required for participation would be approximately 4 hours over the 15-week program.

Are there any questions that I can answer for you?

When I was interested in interviewing a student, I used the **In-person Request for Participation**:

Hello, my name is Mike Giazzoni, and I am conducting a study this summer on members of the Brackenridge Fellowship. I was wondering if I could interview you with regard to my study, on "Two-Cultures" Phenomena, which is when someone faces a challenging experience of interpreting work out of an academic discipline with which they are familiar. This would consist of a 1-hour interview or focus group, at a time convenient for you. With your permission, I would audiotape our interview. When we meet I will provide you with more information, give you an opportunity to consent, and ask you what questions you have about my study.

APPENDIX C

SEMI-STRUCTURED STUDENT INTERVIEW SCRIPT

Thank you for agreeing to take part in this interview. First, I'd like to ask you some questions to get to know your academic background and interests.

1. What have you declared as your major or majors?
2. Will that be changing before graduation?
3. How did you choose that or those majors?
4. Would you say that you are good at the classes in your major?
5. Do you like your major or majors?
6. Sometimes there is a perception that, based on their personalities, certain types of people fit best in certain majors. For example, you may have heard a person refer to him- or herself as a "math person" or another person refer to him- or herself as a "literature person." Would you say that you agree that there are certain "types" of people that fit in certain majors?
7. Given your answer, would you say that your personality "fits" in your major? Are you a "____ person"?

Thank you for your answers so far. Next I'd like to talk about your research project.

8. What is the field in which you are conducting your research project?

9. Is it different or the same as your major field?
10. How did you decide on a research project in this field?
11. Who is your research advisor? What is that person's academic focus?
12. How did you get connected with your research advisor?
13. How would you define what qualifies as "research" in this field? Would that definition work for any field?
14. How would you define "interpretation" in this field? Would that definition work for any field?

I am interested in what happens when people from different fields get together and talk about their work. At Brackenridge, it's often hard for very bright students from different fields to understand each other, and I'm interested in why that happens. I'd like to ask you some questions about your thoughts and opinions on the [topic] presentation that we saw on [date].

Possible probes:

- Walk me through your experience of [topic].
- What does it call up for you?
- What were you thinking about during [event]?
- What were you feeling during [event]?

If these questions are not answered, ask them:

1. How did you feel when the presenter said, [topic]
2. How did you feel when you asked [question]?
3. What did you mean by [question]?

4. Tell me more about [topic] being difficult to understand.
5. In the presentation we are discussing, what do you think that the student was trying to figure out?
6. How open did you feel you were about hearing about research in a different subject?
7. In terms of your understanding of how research on and interpretation of data or texts is done, what kind of surprises did you discover as you listened to the presentations?
8. As you experience Brackenridge, your ideas about research and interpretation challenged? Changed?

In the field that I'm studying, the word "pre-understanding" is often used to explain the way that somebody thinks about something as they come to understand it better. They understand it *through* their previous understandings of it. The theorists I study say that it's not possible to study something without having any prejudices: we understand through what we already have in our mind. Sometimes pre-understanding is used interchangeably with "prejudice," which has a negative connotation, but the idea is the same.

9. Do you see yourself having any pre-understandings ("prejudices") about the way that we should ask or answer questions that made it difficult for you to understand this presentation?
10. If you did see yourself as having pre-understandings, how did they change at any point during the presentation or question-and-answer period?
11. Do you see any changes in these pre-understandings or prejudices as we talk here today?
12. That covers the things I wanted to ask. Is there anything you care to add, or anything that I should have asked you?

Will you be attending the Brackenridge Retreat at Pitt-Johnstown from July 9 to 12?

Some of the students I interview will be asked to participate in a 1-hour focus group during one of the evenings there. If selected, would you be available to join us?

APPENDIX D

FOCUS GROUP DISCUSSION TOPICS

Welcome, everybody, and thank you for agreeing to take part in this focus group.

- Introduce students to each other, along with majors and topics of projects.

Possible topics:

- What is a definition or description of “research” in (humanities, social sciences, natural sciences)?
- Can we come up with a definition that work for all of your fields?
- Address the same questions for “interpretation.”
- Revisit hypothetical alchemy project

Other keywords to initiate conversation:

- Progress, truth, falsifiability

APPENDIX E

CONSENT TO ACT AS A SUBJECT IN A RESEARCH STUDY

University of Pittsburgh
School of Education
Department of Administrative and Policy Studies
5902 Wesley Posvar Hall
230 South Bouquet Street
Pittsburgh, Pennsylvania 15260
Phone: (412) 648-7101
FAX: (412) 648-1784

CONSENT TO ACT AS A SUBJECT IN A RESEARCH STUDY

Title:	A Hermeneutic Analysis of "Two Cultures" Phenomena, and Its Implications for Liberal Education
Name of researcher:	Mike Giazzoni, graduate student
Office:	3506 Cathedral of Learning, Pittsburgh PA 15260.
Telephone number:	Phone: 412-624-0121. Email: giazzoni@pitt.edu.
Faculty Mentor:	Michael Gunzenhauser, PhD, Associate Professor of Education 5902 Posvar Hall, Pittsburgh PA 15260. Phone: 412-648-2119. Email: mgunzen@pitt.edu.

The purpose of this research activity is to gain insight into the following research problem: What is the nature of the phenomenon of academic cross-cultural misunderstanding, and what implications does it have for liberal education? Approximately 10-14 members of the Brackenridge Fellowship will be asked to participate in this research study. I am interested in your views about the experience of interpreting an academic presentation in a field with which one is unfamiliar. If you agree to participate, you will participate in a one-hour interview, a one-hour focus group, and/or one-hour follow-up interviews. The time entailed would be approximately 4 hours over the course of 15 weeks.

There are no costs to you for participating in the study, and you will receive no direct benefit from participating in the study. Volunteers will not be paid for their participation.

There is little risk involved in this study. The major potential risk is a breach of confidentiality, but we will do everything possible to protect your privacy.

All records pertaining to your involvement in this study are kept strictly confidential. In my notes from our interview I will choose a pseudonym for you. With your permission, I will audiotape our discussion, to be transcribed later. All notes, tapes, and transcripts will be stored in a locked file. The list of pseudonyms will be stored in a separate locked file. All of these records will be retained by me until my dissertation is complete.

The University of Pittsburgh and the Brackenridge Fellowship will be named in the study. However, in any description or publications of this research, your identity will not be revealed, and no information will be included that would allow someone familiar with Brackenridge to identify you. Information about you will not be shared with your research advisor, the Directors of Brackenridge, or University administrators. It is possible that authorized representatives from the University of Pittsburgh Research Conduct and Compliance Office (including the University of Pittsburgh IRB) may review your data for the purpose of monitoring the conduct of this study. In very unusual cases, your research records may be released in response to an order from a court of law.

As mentioned above, with your permission, I will audiotape our interview and transcribe the tape for the purpose of accuracy. The data collected for this project will be published in my dissertation and may be published in conference presentations and journal articles. When my dissertation is completed, these tapes will be erased or destroyed.

Your participation in this study is completely voluntary. You may refuse to take part in it, or you may stop participating at any time, even after signing this form. Your decision will not affect your relationship with your Brackenridge Fellowship or the University of Pittsburgh.

If you have any questions about this research study, you may contact the investigators listed at the beginning of this consent form. If you have questions about your rights as a research subject, please contact the Human Subjects Protection Advocate at the University of Pittsburgh IRB Office, 1-866-212-2668.

SUBJECT'S CERTIFICATION

- I have read the consent form for this study and any questions I had, including explanation of all terminology, have been answered to my satisfaction. A copy of this consent form will be provided to me.
- I understand that I am encouraged to ask questions about any aspect of this research study during the course of this study, and that those questions will be answered by the researchers listed on the first page of this form.
- I understand that my participation in this study is voluntary and that I am free to refuse to participate or to withdraw my consent and discontinue my participation in this study at any time without affecting my future relationship with this institution.
- I have read this consent form and agree to be audiotaped.
- I agree to participate in this study.

_____ _____

Subject's Signature Date

CERTIFICATION OF INFORMED CONSENT

I certify that I have explained the nature and purpose of this research study to the above-named individual, and I have discussed the potential benefits and possible risks of study participation. Any questions the individual has about this study have been answered, and my faculty mentor and I will always be available to address future questions as they arise.

_____ _____

Printed Name of Person Obtaining Consent Role in Research Study

_____ _____

Signature of Person Obtaining Consent Date

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